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Has Alfalfa a Place in the Orchard?

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ORCHARD and FARM

ESTABLISHED 1888

Described in This Issue—

A Mechanical Beet-Topper

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By Country Life Publishing Company

Offices
Los Angeles and San Francisco

A Helping Hand for Every Farmer

THOUSANDS of FLOWERS

From Spring to Fall!

Flowering shrubs, the kind that bloom the first year, and every year afterward, present the simplest and most effective method of beautifying the home grounds. To make it easy for you—for every reader of Orchard and Farm—to do this, we have made up a collection of Hardy Flowering shrubs of extreme beauty and rapid growth.

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Our Big Collection is carefully selected, and contains only those shrubs that have proven their worth under all conditions of soil and climate to be found on the Coast. This collection bears flowers of many colors, from earliest spring, through summer and fall, and to the very edge of winter. There is a variety also of leaf coloring, together with bright berries that cling through the winter.

Nine Months of Beautiful Flowers In Every Year

Beginning in early spring, just as the snow departs, when the **Cornus** opens its great white flowers, there is a constant procession of changing flowers clear up to late fall, when the **Roses of Sharon** are ablaze with gorgeous coloring.

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1 Cornus Florida Large white flowers, measuring 3 to 3½ inches across appear very early in the spring, even before the snow is gone, and continue many weeks. The red berries which follow remain through the winter. Foliage red and gold in the fall.

2 Japanese Candleberry Follows Cornus with a mass of tiny yellow flowers. Its brilliant berries also remain through the winter, and have a high value as a natural dye.

1 Snowball Hydrangea Masses of stately white flowers are borne in such profusion as to resemble clumps of snow, and almost cover the foliage. Early to middle summer.

1 Deatzia Dainty, compound foliage. White or rose-white tassel shape flowers are borne thickly, in wreaths, along the slender, drooping branches. Flowers in June, but the shrub is beautiful all summer.

1 Virginia Creeper A very persistent climbing vine, clinging to wood, brick, stone or stucco. The closely overlapping leaves make cool shade for the porch, and are resplendent with colors galore, in fall and winter.

2 Roses of Sharon Of rapid growth, quickly attaining a height of twelve feet. It bears masses of brightly colored flowers through late fall when so few other flowers are in bloom.

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This wonderful collection of eight shrubs and flowers will be mailed postpaid, including one year's subscription, new or renewal, for 75c, or including three years' subscription for $1.25. Add hundreds of dollars to the value of your home by improving its appearance. Even if your own subscription does not expire for several months, you may take advantage of this timely offer now and the subscription will be extended from date of expiration.

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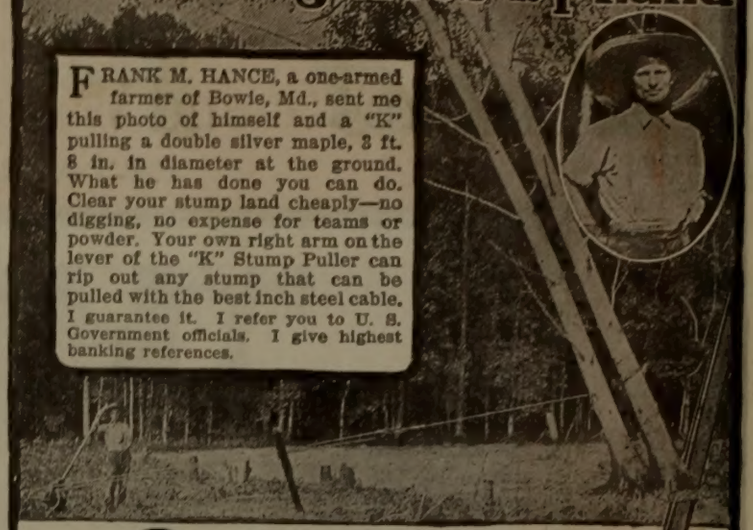

FRANK M. HANCE, a one-armed farmer of Bowie, Md., sent me this photo of himself and a "K" pulling a double silver maple, 3 ft. 8 in. in diameter at the ground. What he has done you can do. Clear your stump land cheaply—no digging, no expense for teams or powder. Your own right arm on the lever of the "K" Stump Puller can rip out any stump that can be pulled with the best inch steel cable. I guarantee it. I refer you to U. S. Government officials. I give highest banking references.

HAND POWER
K Stump Puller

ANY red-blooded man with a "K" can outpull 16 horses. Works by leverage—same principle as a jack. 100 lb. pull on the lever gives a 48 ton pull on the stump. Made of best steel—guaranteed against breakage. Has two speeds—60 ft. per minute for hauling in cable or for small stumps—slow speed for heavy pulls. Works equally well on hillsides or marshes where horses cannot go.

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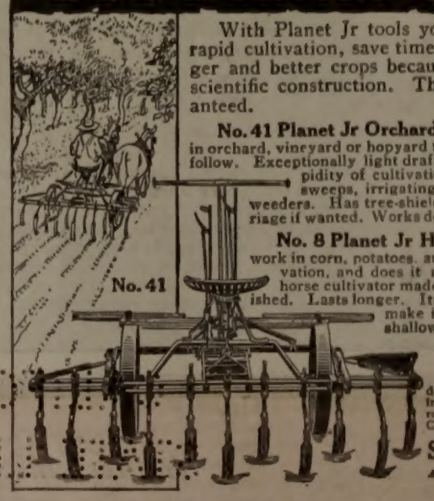

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ORCHARD and FARM

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The Farmers' Friend With a Thousand Helping Hands

By

Clarence Ousley

Assistant Secretary United States Department of Agriculture

Written Especially for Orchard and Farm

THE United States Department of Agriculture, carrying forward hundreds of diverse lines of work for the benefit of farmers in every section of the United States, is never fully informed as to the precise benefits the farmer is receiving from those activities.

It is a characteristic of the average farmer that he does not say very much about his financial affairs and no complete check from that one reliable source is therefore possible. It happens, however, that some expressions have reached the Department of Agriculture from Pacific Coast farmers and orchardists showing what some of them, at least, think of certain phases of the Department work on that coast.

A farmer at Eugene, Oregon, in a communication to the Department of Agriculture, goes into the matter in some detail. He figures as nearly as possible the benefit that he has derived from the work of the county agent; then he adds: "I find that I have received enough profit this year from the county agent to pay my part of the support of his office for 200 years."

The County Agent

Other letters in great numbers have come from fruit growers, farmers and stock men throughout the whole length of the Pacific Coast country.

Among the activities which the Department of Agriculture knows to be highly beneficial to the farmer, the county agent's work has a prominent place. He is in effect a sort of deputy secretary of agriculture, made available directly to the people of a county. Seventy-five per cent of the counties of California, 78 per cent of Washington counties, and 71 per cent of Oregon counties have availed themselves of this service from the Department of Agriculture and the Agricultural Colleges. There is no data available to show what per cent of farmers in each county having a county agent are availing themselves of his services. The expressions quoted above are an intimation of what benefits every farmer and fruit grower might receive if he did take full advantage of this opportunity. And the same applies to the work of the home demonstration agent, who is to the woman in the home what the county agent is to the man in the field or orchard. It applies also to the club agent who does for the boys and girls a more effective educational work than is ordinarily possible with adults. The entire extension work embracing these three classes of agents constitutes only one of several score lines of work that the Department of Agriculture is doing in an effort to aid Pacific Coast growers. It is not possible even to mention all those lines of work but a number of them, because of their financial and economic importance, stand out.

"What Are You Doing for US?"

This is the question we asked the United States Department of Agriculture on behalf of Pacific Coast farmers.

And Here Is the Answer.

The Fig Industry

The United States has been importing from Asia Minor and Southeastern Europe about 20,000,000 pounds of dried figs every year. There is an area in California capable of growing the best quality of figs, and extensive enough to produce many times the quantity imported in this country. But with climatic and soil conditions comparatively ideal, figs until quite recently could not be grown successfully in that area. Then in 1900 the Department of Agriculture introduced the Blastophaga. Although carrying such a big name, that animal is a very minute waspish insect. He does not appear, upon casual acquaintance, to be intimately connected with fruit growing, but it happens that the Smyrna fig is absolutely dependent upon him for pollenization. With his help figs do grow in the California area, not less than 2000 tons being now produced annually.

The Department of Agriculture maintains at Lumis a plant for determining the best varieties of edible figs, and for breeding and distributing the essential fig insects. In no great while, it is to be hoped, the money that the United States used to send to Asia Minor in exchange for figs will practically all go to California.

California contains an area, the Coachella Valley, where conditions are nearly ideal for date growing. The Department of Agriculture maintains date gardens at Mecca and Indio, where a staff of experts is kept at work finding out new things about and applying old things to date culture in California. To mention one thing, the chief difficulty used to be that the off-shoots were very likely to die after planting. Experimentation has evolved a system of rooting the off-shoots in cheaply constructed but tightly covered canvas sheds in which the proper temperature and humidity can be maintained. Generally date growers in the valley are erecting such sheds and as a result the percentage of off-shoots saved and successfully rooted is becoming very high.

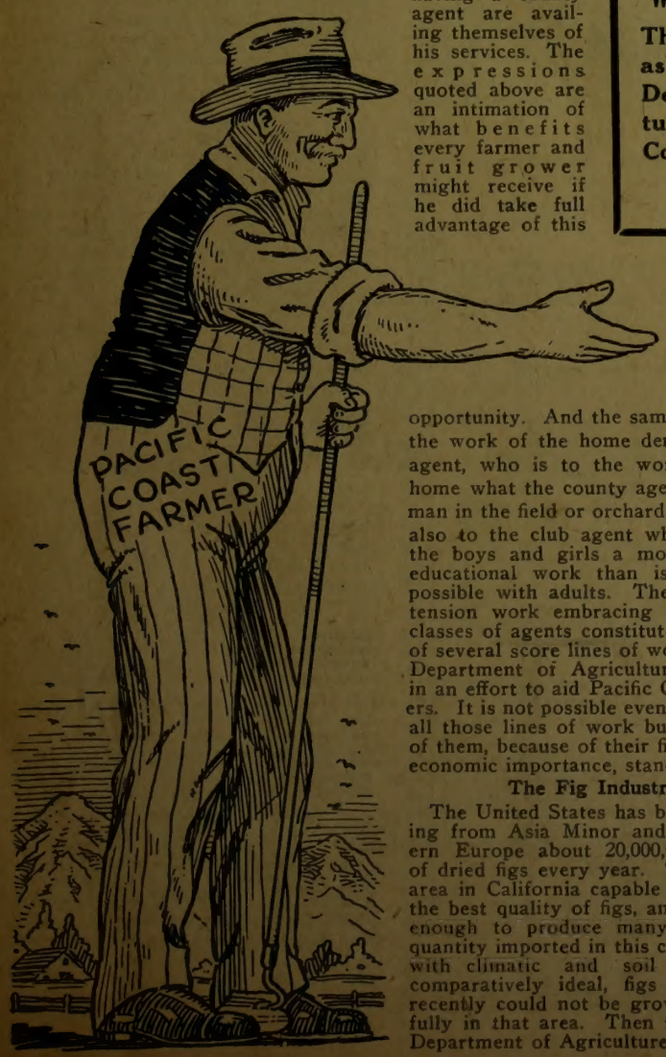
Viticultural Work

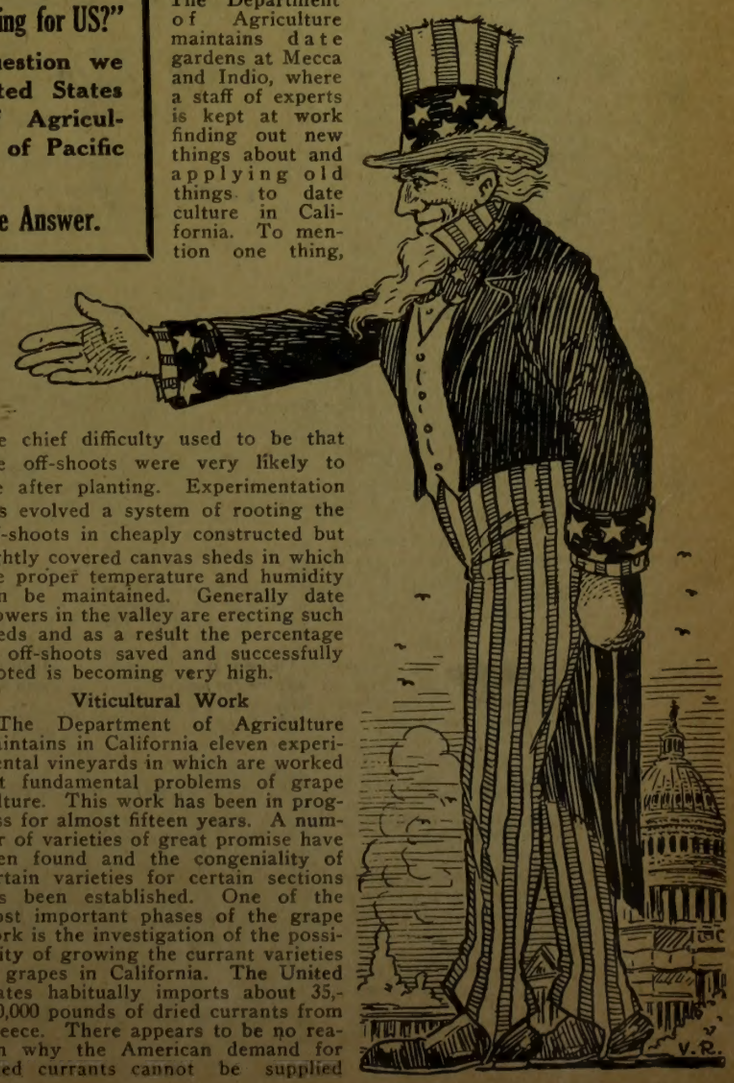
The Department of Agriculture maintains in California eleven experimental vineyards in which are worked out fundamental problems of grape culture. This work has been in progress for almost fifteen years. A number of varieties of great promise have been found and the congeniality of certain varieties for certain sections has been established. One of the most important phases of the grape work is the investigation of the possibility of growing the currant varieties of grapes in California. The United States habitually imports about 35,000,000 pounds of dried currants from Greece. There appears to be no reason why the American demand for dried currants cannot be supplied from California and the money that formerly went to Southeastern Europe thus be kept at home. Already commercial plantings of currant grapes are being made with every prospect for the development of a profitable currant industry. (A very interesting article on currant production by Geo. C. Hussman, a U. S. Department of Agriculture agent, appeared in our November issue. A second article will be found elsewhere in this number of Orchard and Farm. —Ed.)

Olive Discoveries

Since the Department of Agriculture began investigations connected with the olive industry in California, it has been found that the trees known as the Mission variety contain, as a matter of fact, at least three varieties, some of which are large and some small; some having one characteristic and some another. Experimentation has been such as to enable the olive growers to select the best type and to

(Continued on Page 22)





Cabbage Worm

How to Conquer Him

CABBAGE worms of various species have by this time made their presence known on the fall cabbages now in the field. The most important of these is the common cabbage worm, a green larva about an inch long when grown. The parent of this worm is the Imported Cabbage Butterfly, white with black spotted wings. The butterflies lay their eggs mostly on the under sides of cabbage leaves. The young worms hatch from them in four to eight days, feed on the leaves and reach maturity in ten to fourteen days. Then each attaches itself by a thread around the body of a leaf, stalk, fence post, or any other support, and transforms to a pupa called a chrysalis. From this the butterfly emerges in from seven to twelve days. In Southern California there may be as many as five or six generations during the season. The last chrysalides formed in fall remain thus over winter on dead stalks and produce butterflies the following spring. All of the cabbage worms being "chewing" insects, they may be controlled by arsenical sprays.

Spray Formula

To make 50 gallons of spray dissolve four pounds of laundry soap or other good soap in several gallons of water by boiling. Add this to enough water to make 50 gallons. Then stir in the arsenic (1½ pounds of powdered arsenate of lead or three pounds of paste form, or other arsenicals according to directions on package). The soap is used in order to make the liquid adhere better to the smooth leaves.

To make one gallon of spray use one-half ounce of powdered arsenate of lead, or one ounce of the paste form and an inch cube of soap.

Dusting may be substituted for spraying, using one part of powdered arsenical to four parts of air-slaked lime. In small gardens the mixture may be shaken on the plants from a cheesecloth bag. Apply thinly while the dew is on the leaves.

Since the cabbage head grows from inside the plant, there is no danger from poisoning. If outer leaves are removed before cooking, spraying is safe to within three weeks of harvest. If spraying is begun early in the season there will be little damage from late broods of worms.

Spray Information

To give fruit growers a more intimate knowledge of spraying materials, spraying machinery, and the whys and wherefores of spraying so their operations may be more uniformly successful, a handbook on spraying insecticides and important insect pests has been published by the United States Department of Agriculture as Farmers' Bulletin 908.

A boost for California horse-bean growers is the recent Government bulletin which is being widely distributed. It urges more general growing of the beans throughout the country and points out their high feed value, as well as their growing use for domestic purposes. Such good "propaganda" cannot fail to increase the demand for California seed.

Barley in Bulk or Bags?

Shall we discard the grain sack in California? Bulk-handling enthusiasts maintain that the use of sacks is wasteful, antiquated, costly—and they have some good arguments.

By Albert J. Mason.

DOES it pay to handle grain in bulk instead of in sacks? There are those who maintain that within a few years the use of grain bags will be practically eliminated in California as has been the case in other great grain-growing sections.

Despite a strong campaign for the adoption of bulk-handling, it was not until jute sacks sky-rocketed in price that California grain farmers showed much disposition to give them up. Having tried the experiment, however, a number of big wheat-growers have been entirely converted, and indications are that even if the bags drop to their former price, they will gradually be discarded throughout the State as the principal means of handling grain.

Why the Change?

There are a great many arguments in favor of the bulk method, but until the price of sacks and labor advanced, as has been the case during the war, the advantage of bulk handling accrued to the shipper and dealer rather than to the farmer. The one exception to this statement was the damage by rodents, which has always been tremendous; the farmer has carried a large proportion of this burden.

A careful estimate, based on official statistics and recently given wide publicity, places the cost of feeding each rat in the United States at 60 cents per year. The rat population is estimated to exceed five-fold the human population. According to this the annual loss in grain alone due to rats is over $100,000,000. This enormous figure may be better understood when reduced to terms of production. No less than 200,000 men, with an expensive equipment of farms, implements, buildings and machinery are employed in feeding our rat population.

Big California Losses.

California farmers suffer in this tremendous economic loss each year, along with those of the East and Middle West. In fact, it is probable that the share of California grain growers in the rat-feeding bill will average more in proportion to crop raised per farmer than is the case in Eastern and Middle Western States. This is because of the custom of handling grain in sacks. Persons familiar with the California grain situation estimate the losses due to the handling of grain in sacks in California is close to twenty-five per cent of the total crop, and a large part of this is charged up to the rats.

Grain, in sacks, piled up in a field after the harvester has left the job, is an easily accessible source of food supply not only to rats, but to gophers, squirrels and other rodents which infest the fields. The jute grain bag is no protection against the sharp teeth of the rat, and thousands of sacks annually are cut through. The grain is partly eaten; much is spoiled, and a gaping hole is made, through which more grain spills during the operations of transferring it from field to freight cars, and from car to warehouse. There is, moreover, the

(Continued on Page 25)

Pass Along Your Good Ideas

Over $100 in Prizes

Contest Does Not End Until May 1, 1919.

"I LET a little sand blow into my cup-grease can and almost ruined some of my tractor bearings.

"I have discovered that an ensilage-cutter may successfully be used for chopping barn-yard manure and loading it on cars."

"Tips" like these given in some detail, and drawn from the practical working experiences of farmers, are probably the most valuable type of articles Orchard and Farm can publish. One kind is a "don't" and the other a "do," but both may be the means of assisting fellow-farmers.

SUGGESTIONS TO THOSE DESIRING TO ENTER OUR CONTEST

In order to make Orchard and Farm truly a clearing house or meeting place for the farmers of the Pacific Coast, we ask our readers to send in their experiences. Almost every farmer is an inventor, continually devising time-savers, short cuts and new methods. Almost every farmer is an experimenter, continually making new discoveries. A photograph, drawing or rough pencil-sketch is very desirable in connection with such stories. It is better to send the films of photographs, although we are very glad to have good, clear prints. We especially desire descriptions of handy mechanical devices, schemes for handling farm animals or poultry, experiments with feeds and combinations of feeds, tractor hitches, shop equipment, suggestions for temporary or emergency repairs, how to raise the standard and lower the cost of living—all these things offer suggestions for these stories we are requesting from our readers.

All such communications will be saved and the best ones published. At the end of a year, a committee of experts from the College of Agriculture of the University of California will pass upon them.

The writer of the communication which is adjudged by this committee to be the most valuable, will receive a prize of $50. The second prize will be $25, the third prize $15, the fourth prize $10, and the fifth prize $5.

Write to Orchard and Farm, Examiner Building, Los Angeles, making your letter as clear and as brief as possible; give full name and address and mark your communication with the words "For Prize Contest." Don't forget the sketches or pictures if it is possible to send them; they are not, however, required for entrance in this contest. Help your fellow-farmers.

Subsidized Stallions

An Interesting Breeding Plan

THAT we have reached a point in horse breeding where we must have State subsidy of approved stallions, is the contention of Wayne Dinsmore, secretary of the Percheron Society of America.

Mr. Dinsmore points out that France, Belgium and other European countries have built up and maintained their fine horse stocks for many years by this system. It is manifestly impractical (if not impossible) for a farmer with from six to eight brood mares to buy and maintain a high-grade stallion for his own use, and conditions are now such that traveling with one animal is rarely profitable. While various farmers' co-operative organizations have, in some instances, purchased and successfully maintained stallions, it is the secretary's belief that if our stocks of good horses are not to be alarmingly depleted, the States must take hold of the matter, so that (1) only the best stallions will be used; (2) there will be an adequate supply of stallions; (3) there will be at least 100 mares per season for each sire.

The sires will remain in private ownership, according to the plan as recently outlined by Mr. Dinsmore, but from a fund (estimated at $50,000 a year) the State will pay 20 per cent of the $25 service fee for each mare, thus guaranteeing the owner a fair profit, and giving mare owners at low rates the services of the best stallions. In order to protect the State and the owner, it is further stipulated that legally organized farmers' clubs must co-operate by guaranteeing for each subsidized sire at least 100 mares per season.

The plan would be administered through the already existing State Stallion Registration Board, and its promoters believe that the returns in increased values to the State will be $100 for every $1 so expended.

Stallion Figures

During the period from 1913 to 1918, the number of registered stallions and jacks in California has declined from 2278 to 763. During this same period, however, the proportion of mongrels has decreased from 32 to 15 per cent. There are now more Percherons registered than any other breed or class. The motorizing of America, as well as the demands of war have shown a striking effect upon the horse breeding business in California, as in other States, but there has been an encouraging improvement in quality. The figures are taken from the recently published report of the Stallion Registration Board.

It is estimated that the practice of inspecting and immunizing against cholera the hogs which are shipped from the stock yards to country points for breeding and feeding purposes, added to the nation's meat supply during the first six months of the year, more than 37,000,000 pounds of pork.

What Alfalfa Will Do for Your "Tired" Orchard

Perhaps your fruit trees need a tonic! As a reconstructor of worn-out orchards, and as a cure for mysterious fruit diseases, the king of forage plants is being used by many growers with remarkable success.

By Robert W. Hodgson

PERIODICALLY there comes up for discussion the question of whether alfalfa has a place in the orchard, and the subject never fails to arouse the interest of the fruit grower. For the possibility of double cropping orchard land and at the same time raising feed for a certain amount of livestock kept as a side line, is certain to appeal to our western fruit growers. It used to be the custom on the part of so-called horticultural authorities to dismiss the subject quite summarily with a statement to the effect that such a practice was destined to complete failure in the arid West. The only reason advanced was that it too much resembled the permanent sod system of orchard culture used in the East where summer rainfall obtains and where conditions are very different. In short, because the growing of alfalfa in the orchard did not fit in with the approved methods of dry farming as generally recognized, the practice has been discouraged in California.

Courageous Pioneers

But there were a few levelheaded individuals who did not take the advice of these "experts" too seriously and, reasoning that where water was abundant it was quite a simple matter to apply enough for both trees and alfalfa, went ahead on their own initiative and planted alfalfa in their orchards. The success of some of these men has demonstrated beyond question that where conditions are right, the practice is to be recommended as being decidedly beneficial.

Some years ago the writer became interested in this question, having observed a number of cases in which most favorable and satisfactory results had been obtained. Since then he has spent considerable time in gathering together the experiences of some of the successful fruit growers and in attempting to determine just what conditions are necessary for success. It has also been his quest to determine what beneficial results may be expected to follow the use of alfalfa.

Conservation of Organic Matter

Some years ago Prof. C. B. Lipman of the University of California came out with the startling statement that sooner or later California orchardists would be forced to discontinue clean cultivation if they wished their orchards to endure. He based this conclusion on investigations carried out by him and others which showed beyond a doubt that the continuous stirring of the soil in our orchards in an effort to conserve the store of soil moisture is resulting in the gradual depletion of the organic matter and humus content. This condition, he ascertained, was occurring even in orchards where earnest efforts were being made to increase the humus content of the soil through the use of manure and other sources of organic matter, although, of course, much more slowly than in orchards where no attempt was made at soil building. Although this was considered quite a revolutionary doctrine at the time, the soundness of the idea is now more apparent. What, then, is our western fruit grower to do?

Limitations of Irrigation

Some growers, who are fortunately situated where plenty of water is available, have been led as a result of Dr. Lipman's prophecy to abandon summer cultivation entirely, substituting for it frequent irrigation. Although this method results in the wasteful use of water, it does prevent the rapid burning out of the organic matter in the soil, and certainly is calculated to defer the time when the soil becomes worn out and sterile. But it does not provide for the building up of the soil which every good farmer hopes to bring about so that he can leave his land to posterity in a more fertile condition than that in which he found it. He who has any other aim cannot but be considered as a profiteer rather than a true husbandman of the soil. Moreover, under certain conditions this method of handling an orchard cannot be resorted to with satisfactory results on account of the soil becoming waterlogged and dead from lack of sufficient aeration.

What Alfalfa Does

Growing alfalfa or any legume on the land has been known for centuries as a means of building up the soil. Not only is atmospheric nitrogen fixed through the action of the symbiotic bacteria on the roots, increasing the fertility, but the physical condition of the soil is markedly improved. The deep growing roots puncture the lower soil stretches and carry up food from below. Through their death and decay, organic matter is added and the soil benefited in every way. Growing alfalfa on a soil may furthermore be expected to increase its water-holding capacity, to make it more open and friable and thus better aerated, and to prevent the loss of organic matter through excessive oxidation resulting from cultivation. In fact, it might be said that the possibility of conserving the humus content of the soil is the most potent reason why every orchardist should at least consider alfalfa as a possible intercrop.

The experience of those who have tried it is that the additional water required is at least offset if not more than made up for by the saving in cultivation costs, with the hay "thrown in" for the cost of harvesting it.

Encourages Diversified Agriculture

Thus the growing of alfalfa in the orchard provides a cheap source of feed for livestock and no system of agriculture is permanent unless it includes the keeping of livestock. The orchardist who intercrops his trees with alfalfa is practically forced into diversified agriculture and all our authorities agree that the greatest shortcoming in California agriculture is its too great specialization. Livestock means manure and manure means increased soil fertility, which in turn means more and better fruit.

Cures Fruit Diseases

With the culture of deciduous fruits under irrigation in the arid West have come a number of peculiar problems which have until recently defied all attempts at solution. Among these may be mentioned the alarming increase of bitter-pit of the apple, stippen, Jonathan spot, Baldwin spot, cork, drought spot, rosette and little leaf. All of these troubles and others of a similar nature have become very prevalent in western fruit growing sections and have caused serious losses. In some cases they have even threatened to cause the abandonment of fruit raising.

A great deal of time and effort has been spent in investigating these obscure troubles but it must be confessed that our present knowledge of their cause is decidedly unsatisfactory. There are, however, a few facts which have been uncovered which in their application bid fair to enable growers to combat certain of these troubles. And the most important is that the growing of alfalfa as a permanent cover crop in orchards in many cases results in a marked change for the better with respect to these conditions.

Eastern Report

A. J. Mix of the Geneva Experiment Station in New York after an extensive investigation of certain of these diseases writes as follows: "The most promising outlook for the control of drought spot and cork seems to be in methods of conserving soil moisture and improving the water-holding capacity and physical condition of the soil. Clean cultivation is not effective. Perhaps clean cultivation combined with leguminous cover crops may accomplish more."

R. W. Allen, writing from the Oregon Agricultural Experiment Station, says: "Fruit pit and winter injury have rapidly disappeared following the application of irrigation and the use of leguminous crops in the orchards." O. T. Clawson, writing of conditions in Washington and Oregon, offers the use of alfalfa as a positive remedy for rosette, stating that two or three years' growing of this crop in an affected orchard results in the disappearance of the trouble.

D. F. Fisher, in a recent letter to the writer, says: "It may be of interest to you to learn that fully 75 per cent of the apple orchards in the Wenatchee district now have alfalfa as a permanent cover crop. Alfalfa appears to correct many of our soil troubles, and where sufficient irrigation water is available, its use is generally favored."

In Orange Groves

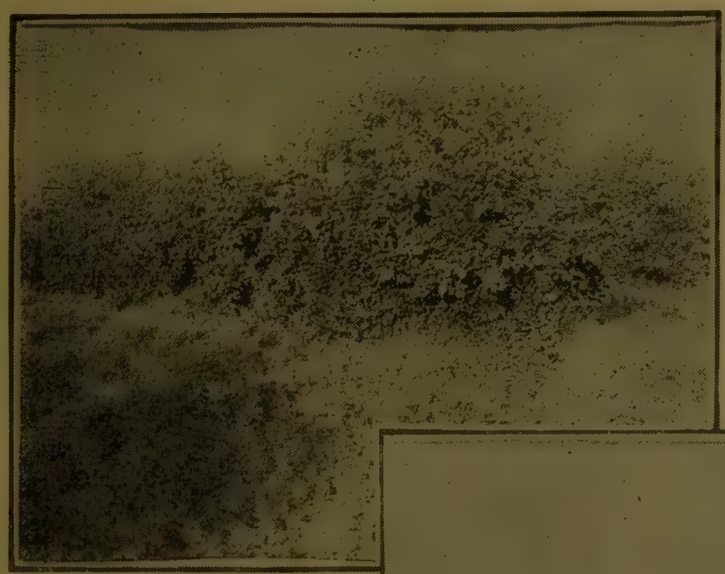
It is interesting in this connection to note that the most recent researches regarding the excessive shedding of young navel oranges in California all point to a summer growing plant such as alfalfa as the most promising possibility for successful control. The C. W. Kellogg orchard at Bakersfield was never profitable until planted permanently to alfalfa a number of years ago. Since that time it has yielded twice and three times the crop produced by neighboring orchards of the same age and it has never failed to carry a satisfactory crop when other orchards in the same locality have shed practically the entire crop.

When Not to Plant

Unless sufficient water is available for both trees and alfalfa, more harm than good will result from planting alfalfa in the orchard. There will be active competition between the two for water and the alfalfa will get the better of the bargain to the detriment of the trees. This has been found to be particularly true of citrus trees. Existing unfavorable conditions will be aggravated if there is a deficiency of water.

Where the underdrainage is poor,

(Continued on Page 8)



Alfalfa and Oranges

The C. W. Kellog grove, near Bakersfield, which has been rejuvenated with alfalfa and always carries a heavy crop.

An Apple Orchard That Responded

These trees, in the Antelope Valley, were restored to life after having reached an almost hopeless condition, when the owner, Dr. C. Evans, planted the grove to alfalfa.

A Machine That Tops and Pulls Beets

Who could be better qualified to invent a beet-topper than a beet grower? It remained for a California farmer to display the mechanical genius necessary for the development of a successful machine to supplant irksome, expensive hand-labor.

A CALIFORNIA farmer-inventor, Howard E. Williams, of Compton, has perfected a beet-topping and harvesting machine.

Now that the war is over he expects soon to manufacture the implements for the market, having secured patents covering several features of his device.

The great "bug-bear" of sugar beet growing, the thing which contributed probably more than any other factor to the difficulties encountered by the Government in securing the desired increase in beet acreage during the recent world sugar shortage, is the hand labor involved in the usual growing methods.

A Great Service

If then, as seems apparent, Mr. Williams has actually succeeded in solving this great problem, he has indeed performed a great service to his fellow farmers. Although various inventors have worked out machines designed to do this work, no other has met with success. All former inventions have finally been abandoned for one cause or another; they were too heavy, too slow, too expensive to buy and operate, or would not do the work properly. Mr. Williams, however, seems to have hit the nail on the head from every angle.

His machine is remarkably simple, considering the work that it is required to do. It is in the form of a harvester, combining topper and digger, and was built by Mr. Williams on his ranch, largely from parts of other machines, to do his own work. He has, therefore, developed it from the most practical angle. Being a beet grower himself he knew what was needed and what the machine must accomplish in order to be successful.

"My machine," said Mr. Williams recently, "has been proved in tests before implement men and farmers to do more accurate work than hand labor.

A careful study of the subject, the inventor explains, revealed the fact that there was a great loss in the use of hand labor because of the variation in size of the beets. While the hand-cutter must depend upon guess work, the machine has a calipering device which measures each beet separately and adjusts itself accordingly, so that there is no waste in cutting. This device sets the cutters at the proper height irrespective of the size of the beets and the amount that they extend out of the ground. It consists of two arms, working through an equalizer.

These arms, or calipers, are drawn along on each side of the row as the machine moves ahead. The equalizer enables the calipering device to work accurately even if the machine should get a little off of line in the row. The larger the beet, the lower the crown; larger beets, consequently, must be topped lower than smaller ones. The calipering device, in conjunction with the equalizer lowers the cutters according to the size of each beet.

A Clever Device

The cutters are raised, on the other hand, by an endless "track," which may be seen in the illustration. This chain track runs over the tops of the beets and is driven backwards at a little greater speed than that made by the machine as it is drawn along the row. This motion has a tendency to push the beets against the cutters so that they are not pushed over. Thus the calipers lower the cutters while the track raises them.

The cutters consist of discs, which are rotated at high speed towards one another, and derive their power from the drive wheels of the machine.

The accompanying photographs do not show the digging device, which is now incorporated with the topper in one machine. Either horse or tractor power can be used. In tests, the original machine was successfully drawn by two horses. It is probable, observers believe, that a self-propelled implement will finally be perfected. In that case, it must be agreed, the grain farmer with his "combine" will "have nothing on" the sugar beet grower.

Will It Revolutionize the Sugar Beet Industry?

Here is the unique machine which has startled farmers and mechanics by the almost uncanny speed and accuracy with which it tops beets. Above, the inventor is exhibiting some of the work accomplished. Below, a view of the topper ready to go to work in the field. It was made on the ranch, largely from parts of old farm implements.

Good News!

IT IS with no little pleasure that we announce another of Luther Burbank's inspiring and interesting articles, which we have secured for publication in an early issue of Orchard and Farm. No other agricultural magazine is able to give to its readers such features as these articles by the world's greatest living plant-breeder and naturalist. Watch for Burbank's next article; it is one of the best he has ever written for Orchard and Farm!

And our readers will be pleased to know that Hardy W. Campbell, whose article in our December number made a tremendous sensation, has prepared another equally revolutionary treatise on dry farming and up-to-date tillage methods, which he has brought right down to California conditions. This is a story about and for Pacific Coast farmers; one which not a single farmer should miss; one with a message for YOU. We are planning to publish this big feature in our next issue.

APPRECIATION

A San Jacinto subscriber, E. H. Ingalls, of the "II" Stock Ranch, writes of Mr. Campbell's recent article: "It alone was worth all I have ever paid for Orchard and Farm." Mr. Ingalls also inquired as to where he could secure a copy of Mr. Campbell's book, Progressive Agriculture. For the information of all our readers, we call attention to the fact that we have been offering this book as a premium with subscriptions and have still a few copies on hand. These we will furnish with one year's subscription to Orchard and Farm for 75 cents or with three years' subscription for $1.25. Single copies, 35 cents.

ABOUT WORRY

We are always being told that it doesn't pay to worry, but almost everyone has to find it out for himself. The influenza epidemic has brought this great fact home to many of us. Many farmers and business concerns have been driven almost to the point of distraction by illness which has claimed members of the family or firm, or valued employes. Orchard and Farm has not escaped the scourge, but like many others who apparently faced almost insurmountable difficulties, we have met and conquered our problems as they arose, only to look back upon the troubled period after it was over and find that what worrying we did was of no avail and that, as Old Aunt Mary used to say, "Things will work themselves out some way." But if your letter was unanswered for a few days, or your paper was not received just on time, you will understand that we, like yourself perhaps, and your neighbors, have been "fighting the flu."

We know not whence nor why it came to claim more lives in a few months than the great war in four years; but we rejoice that it is apparently on the wane everywhere. Don't take chances; it is a dangerous malady, but don't be afraid, and don't worry! May the New Year bring to you the peace of mind, prosperity and happiness that we all desire! That is Orchard and Farm's 1919 wish for every reader!

--The Editor.

Insuring the Future of the California Apple

ARE you one of those who has felt that the California Apple Standardization Law was unjust and unsatisfactory? Admitting that the law, as first enacted, called for improvement; admitting, in fact, that it must yet undergo some changes before it can meet all requirements, State Horticultural Commissioner Hecke contends, nevertheless, that the act was designed and is being applied for the ultimate benefit of the industry as a whole, and advances some interesting arguments in support of his position. Incidentally, he gives some startling figures on apple growing in the State and emphasizes the necessity of doing everything possible to foster and advance this important industry.

By G. H. Hecke

PRACTICALLY every county in the State of California is growing more or less apples. The industry began on a large scale in the Pajaro Valley district of Santa Cruz County, with Watsonville as its center, and in the Sonoma County district surrounding Sebastopol; in fact at the present time these two districts produce by far the largest part of the State's apple crop. Of recent years there has been quite an extensive development in apple production in the Southern part of the State, until at the present time the combined acreage of this fruit in Riverside and San Bernardino counties is not far short of the total acreage grown in Santa Cruz County. The Yucaipa and Victorville districts are rapidly coming to the fore. Humboldt County, on the north, offers splendid inducements for apple growing and the same may be said of San Diego County, in the extreme south, while all the foothill counties of the Sierras have soil and climate that are favorable.

At one time the industry in California was in a rather precarious condition owing to the fact that the pack which was put up in this State did not compare favorably with the pack of other sections, especially that of the Northwestern States. In 1915 the Legislature of California recognized that something would have to be done if the industry continued to be profitable; therefore, what was known as the "Apple Standardization Law" was passed. From the beginning, the enforcement of this law by the State Horticultural Commission resulted in a material benefit as far as the prices of apples were concerned. The law was found to be defective in some respects and consequently was amended by the Legislature of 1917. The new law has proved very satisfactory. Under its provisions only three grades of apples can be packed, namely, "California Fancy Grade," "B Grade," and "C Grade." These designations of grades, it is believed, are the best that are used anywhere. In most of the States such terms as "Fancy," "Choice" and "Standard," with sometimes an "Extra Fancy" designation, are used. As the words fancy, choice and standard are practically synonymous, their use in designating grades is more or less misleading. In the case of the California plan there need be no doubt on the part of any one as to which is the higher and which the lower grade.

Administering the Law

A fund to be used for the employment of inspectors to enforce the provisions of the act accrues from the sale at one-half cent each of stamps designating the grades. In 1917 the income derived from the sale of these stamps amounted to $9975.37. This was sufficient to cover all expenses, leaving a sufficient surplus with which to begin operations during the season of 1918. There were employed in the Watsonville territory in 1917 a chief apple inspector, who served throughout the entire year, and ten subordinate inspectors, who were employed only during the packing season. In the Sebastopol district there were employed during the season one chief inspector and four subordinates. In addition to this force, there were two inspectors serving in Southern California in the Riverside-San Bernardino district. This season we have been able to do the work with three less inspectors in the Watsonville district than in 1917, the number in other places being the same.

Results of Work

That there has been a tremendous benefit to the industry as a whole because of the improvement of the pack and the almost total elimination of wormy and diseased fruit from the market is the practically unanimous testimony of apple growers, packers, shippers and commission men who are in close touch with the situation. The work of inspection was first conducted in the packing houses. Necessarily some little time was required to educate the packers in the provisions of the new law. During the past season we have broadened our work, keeping an inspector in San Francisco and in Los Angeles during the season when apples were coming in.

This has resulted in practically a total clean-up of undesirable packs of fruit in San Francisco and a big improvement in the markets of Los Angeles. The results in the Southern metropolis were not quite so striking as in San Francisco owing to the fact that preparation had been made by periodical inspections in San Francisco during the season of 1917. For the first time in the history of the apple business in California the markets of San Francisco and Oakland during the past season have been almost free from wormy apples. Cooperating with the county horticultural commissioners in the counties of Alameda and San Francisco, apple inspectors of the State Commission of Horticulture have succeeded in intercepting shipments of wormy fruit, which in every case have been diverted for by-product uses. The result of these condemnations in the larger markets has been that the grower cannot afford to take chances in making shipments of undesirable fruit to those points, knowing that when he does so that there is every chance of their being intercepted and the fruit disposed of in such a way that there will be a loss to him. Although apparently drastic, the law results in great benefit, not only to the consumer but to the industry as a whole, for it encourages better packs and consequently brings about better prices. We have an abundance of testimonials in this office from leading apple growers, packers and commission men regarding the benefits of the apple law. The following extracts are from letters received from certain of these interested fruit men.

Some Testimonials

A large commission firm of San Francisco writes: "Standardization has improved the packing to a remarkable extent, something which is very noticeable in the selling qualities. At present writing there are a very few packers who do not apparently understand the law to its full extent, but with the rigid inspection that is now being enforced, we believe that within a short while the improvement will be universal."

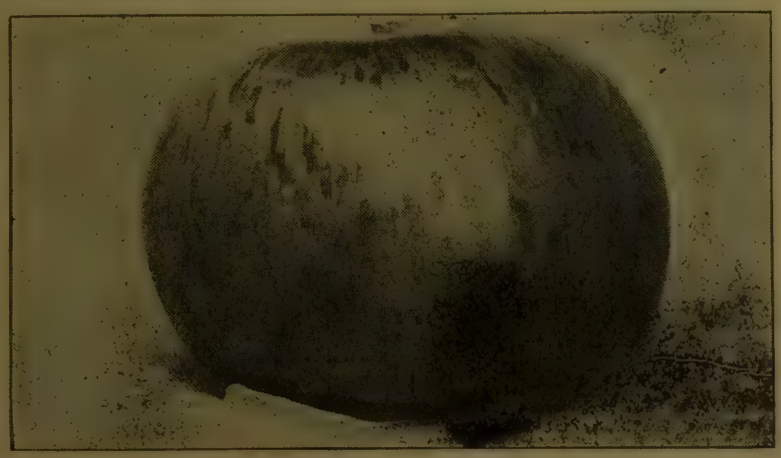
Another commission firm of San Francisco states: "We believe that the great benefit of the 1917 Standard Apple Act is yet to be seen by growers and also by consumers and small dealers, who at the present time do not approve of it on account of the higher price due to better grade of fruit obtained, and we hope the good work will go on. The great good that will ultimately result will be acknowledged by all."

A large fruit grower at Watsonville states: "The community as a whole benefits by this act for the reason that the reputation of California apples is again gaining its former place in the larger markets of the country and it was not so very long ago that many of the buyers in these markets would not consider the purchase of California apples. We wish to say that we hope this inspection work will continue with as good results as we have been getting to date from its application, and will say further that we would not care to see apples put up in the hit or miss way in which they were formerly packed, even if the cost of inspection to us were more than doubled."

A large Watsonville packer writes: "We could write pages upon our approval of the Standard Apple Act and then not have expressed the merits of same from the packers' standpoint. When we mention the 'packers' standpoint' you realize we are expressing the ideas of about thirty or forty producers that own our company, which is an association of growers."

Suggestions for Improvement

Despite the fact that great benefits are already being recognized from the enforcement of the apple act, some changes are necessary in order that it may bring about the greatest amount of good for the industry as a whole. There should be a standard apple box, and the trade is rapidly recognizing the fact that the box which is used in the northwest is scientifically correct for packing the different sizes into which apples naturally fall. National legislation is again being contemplated with the idea of providing a uniform box for use in the different States of the Union. The grade requirements need to be made even a little more strict than they are under the present law. It is therefore probable that during the coming session of the legislature, the apple act will undergo some slight changes, designed to eliminate some of the weaknesses that have been discovered in its enforcement.



A Promising New Baldwin Seedling

A True California Apple, Developed by Luther Burbank and Received With Great Favor by Consumers.

POSSIBLY few Californians recognize the fact that this State is fast assuming a leading place among the States of the Union as far as the apple industry is concerned. The present total acreage of both bearing and non-bearing trees is 77,702; 41,584 acres are in bearing and 36,118 are just coming into bearing. From these figures it will be seen that the production of this fruit will be tremendously increased in another two or three years. There are only three other fruits grown in the State which exceed apples in acreage. They are oranges, with an acreage of 161,579; peaches, with an acreage of 123,689, and prunes, with an acreage of 123,588. According to statistics of the Bureau of Crop Estimates, U. S. Department of Agriculture, the production of apples in this State in 1917 was 5,592,000 boxes. This production during the same season was exceeded by only the following States of the Union: New York, Pennsylvania, Virginia, West Virginia, North Carolina, Ohio, Indiana, Illinois, Missouri, Washington and Iowa. When the present non-bearing acreage comes into full bearing many of the States in this list will be below California in production. When we consider the fact that practically every State produces more or less apples and that most of them have at least a small commercial production, we can readily recognize the importance of doing everything possible to improve the standard of the apples packed in order that the keen competiton of other States may not result in a poor market for our fruit.

Luther Burbank

In his next article will continue the discussion of apple varieties and breeding experiments, commenced in our December issue. Having recognized years ago the possibilities for the development of the apple industry in this State, the great plant breeder has devoted much study to the production of new varieties and the improvement of existing strains. Watch for this big feature!

Success With Avocados

Intensive Methods Produce Results on a Six-Acre Pomona Ranch.

By Reece T. Blake

SAMUEL M. FULTON, who is developing a six-acre avocado and citrus ranch in the San Jose hills, near Pomona, seems to be attaining remarkable success with alligator pears.

Among his numerous plantings he has ten avocado trees of the Harmon variety. These are four years from the bud. On the ten trees there are approximately 250 fruits.

There was quite an even setting of the fruits, which are practically all hidden beneath the foliage. In many cases they appear in pairs, on the same twig, and it is not uncommon to find five or six within a radius of eighteen inches.

One of these pears will weigh at least a pound when it is mature. Quite a number of the others range from ten to twelve ounces, although as a rule the Harmon pears do not average more than from four to eight ounces. This is one of the smooth, thin-skinned varieties.

Unusual Growth.

The remarkable thing about these avocado trees is the rapid growth which they have made. At four years of age they are fifteen feet high and they spread from twelve to fifteen feet. Mr. Fulton attributes the fine setting of fruit to the fact that he has been supplying them with an abundance of moisture. He says the Harmon apparently sets better under such conditions.

A Remarkable Avocado

The Fruit Which Samuel M. Fulton of Pomona Is Holding in His Hand Weighs Nearly a Pound. It Grew Upon a Tree Only Four Years From the Bud.

He uses the basin and mulching system, without cultivation. The irrigation water is turned on once a week during the warm months. The trees are mulched with straw, weeds or anything fibrous. This material allowed to work into the soil, keeps the ground nicely loosened and aerated.

The Fulton ranch is apparently ideal for avocado growing. It is located on an elegant hillside, with a southwest exposure. The soil is a loose, decomposed granite. The elevation is nearly 1,000 feet above sea level. When the weather is cold in the valley the Fulton avocados have ideal protection. One morning last winter when the Government thermometer at the hillside just below the ranch registered 24 degrees above zero the thermometer at the upper row in the Fulton grove registered 40 degrees above zero, while a few feet north of his outbuildings the temperature was 41 degrees.

Intensive Orcharding.

Mr. Fulton is interplanting his Naval and Valencia rows with avocado trees. He has ten Harmon avocados four year old, two Sharpless trees, two Spinks avocados which are twelve feet high at two years old, one Ganter, which is bearing a dozen fruits this year, one Northrup with at least a dozen fruits, and two Guatemalas which are doing remarkably well.

Ganter Avacados

Some unusual specimens, produced near Ontario, where there are a number of very promising groves.

In addition to these trees he has growing under tobacco cloth at least 200 avocado seedlings which he expects to bud and set out next year. These are of several well known varieties and are all making a big growth. The Government recently sent Mr. Fulton twenty small avocado trees of the Guatemala varieties, the seed of which was collected by a field agent of the United States Department of Agriculture.

These are planted out in a nursery row with a wall of tobacco cloth stretched along the south side of the row to protect them from the heat of the sun. Mr. Fulton usually places a broad board as a sun-shield at the south side of all trees that he sets out.

In the avocado grove he is growing single and double rows of milo maize and Sudan grass, using the milo fodder for the cows and the grain for the chickens and pigeons. The Sudan grass provides enough forage for all of the livestock. He cultivates the grove occasionally with a home-made tractor.

Alfalfa in the Orchard

(Continued from Page 5)

the extra irrigation required by the alfalfa may result in a water-logged condition of the soil and under such conditions, alfalfa should not be planted. Orchard trees will not stand free water about the roots, but must have sufficient aeration. A number of cases where the growing of alfalfa in the orchard was attended with failure, on investigation by the writer were found to be due to lack of adequate drainage.

The varying success of young trees set in alfalfa fields and of young orchards planted to alfalfa would indicate that it is unwise to plant alfalfa in an orchard until the trees are four or five years old; at least until they are well established. In some experimental cases the trees have done well and in others but poorly. The alfalfa seems to prevent the young tree from getting properly established and may cause stunting.

Experience of Growers

Success in the culture of alfalfa in orchards is being achieved with many different kinds of fruits. One of the most ardent advocates of this system, one who commenced using it over twenty years ago, is A. B. Humphreys of Escalon and Mayhews. Years ago Mr. Humphreys had an almond orchard which began to fail. He brought it back for a few years by irrigation but gradually it began to go back again. He finally decided to plant it to alfalfa, and this decision marked the end of his troubles. Within a season or two a marked change for the better resulted.

Mr. Humphreys, in answer to the query, "What has been your experience with alfalfa as a permanent crop in your orchard?" replied: "Alfalfa in my orchard has meant success instead of failure. It has saved me the cost of cultivation which amounted to hundreds of dollars each year. It has furnished feed for my livestock and greatly improved my soil. And, best of all, it has put me in the livestock game, where every orchardist should be." Mr. Humphreys' experience with alfalfa in his almonds was so satisfactory that he soon planted it in his pear orchard and later in his plums.

F. G. Beresford of Corning, pioneer olive man in that section, speaking of a very fine Sevillano olive orchard planted "solid" to alfalfa a few years ago, said: "To my mind alfalfa in the olive orchard has proven its worth. Not only have the trees responded and made a splendid growth since the alfalfa was planted but there has been a noticeable increase both in yield and in size of fruit. The same holds true with the prune, several orchards in this vicinity planted to alfalfa having come through this season in much better shape than those clean cultivated."

Dr. C. Evans, owner of the famous Valyermo Ranch in the Antelope valley, when interviewed regarding his success with alfalfa in his apple orchards said: "Four years ago we noticed that the apple trees in one of our orchards were not doing well. They were badly affected with little leaf. After considerable discussion we decided to plant alfalfa as a permanent crop among the trees. We sowed it broadcast close up to the body of the trees. It took at once and we have had a fine stand of alfalfa in that orchard for the past four seasons. As much hay per acre was grown in this orchard as was produced on any acre of our regular alfalfa fields. We sowed the alfalfa in May and cut two good crops that season.

Saved Dying Trees

"No appreciable benefits were noticed with the trees that year and very little the second season. The third year the trees began a new growth and the 'little leaf' disappeared. This season, the fourth, the trees are showing a larger and more vigorous growth than ever. We consider this orchard as being completely restored. We were quite settled in our opinion, a year ago—or at the end of the third year of this experiment—that the alfalfa had brought out our trees which we thought were dying. Now we feel satisfied of it and are planting our other orchards to alfalfa."

(Orchard and Farm would like to hear from other readers who have had experience with alfalfa in orchards.—The Editor.)

Alfalfa Agreed With These Apple Trees

To such an extent that it is necessary every year to prop the limbs heavily in order to prevent breakage from the great yield of fruit. A few years ago these trees had almost ceased to bear.

Control of Poultry Lice

Laying aside the question of loss of profits, to allow lice to accumulate upon poultry is a cruel practice, all the more objectionable because it is unnecessary. Directions are given here for the application of a powerful chemical, a few cents' worth of which will quickly rid your flock of lice.

RESEARCH has shown that all poultry lice feed upon the surface of the skin and feathers. They never suck blood as do the mites, ticks and fleas. The eggs are attached to the feathers. The lice never leave the fowl except by accident. Lice cannot live away from a fowl for more than a few hours, hence, anything for the control of the lice must be applied to the fowl and not to the roost.

Sodium fluoride has been found by the United States Bureau of Entomology to be the most effective substance for the control of poultry lice. It is a white powder, harmless to the skin of a fowl and to the skin of a person, but very poisonous to the poultry lice when they eat it. It is better than mercuric ointment for the following reasons:

(1)—It does not muss the feathers.

(2)—It does not irritate the skin.

(3)—It does not sterlize eggs for hatching.

(4)—It can be used on the heads or any part of the fowl, and even on little chicks.

(5)—It can be used on a setting hen without injury to the eggs or chicks.

(6)—When properly applied it kills every louse and every louse-egg on the fowl.

Little Goes Far

Sodium fluoride can be applied either dry or by dipping in a water solution. In treating just a few fowls it is cheaper to use it dry as follows: Hold the fowl with one hand by grasping the two wings over the back. From a dish of sodium fluoride take a pinch of it between the thumb and finger. Place one pinch of it below the vent (always next to the skin); one pinch on each thigh, two pinches on the back; two on the breast; one scattered on each wing; one on the head; one under the throat; one on the tail feathers. That number of pinches applied close to the skin will completely rid a fowl of lice within four or five days. Remember that it is not necessary to dust the sodium fluoride through every feather. Used in this way one pound of sodium fluoride will treat about 100 fowls.

If the flock consists of fifty or more it is cheaper and faster to dip the fowls in a solution of sodium fluoride as follows: Measure comfortably warm water into a wash tub. For every gallon of water dissolve about an ounce of sodium fluoride. It dissolves very easily. If you have no scales to weigh the sodium fluoride use a rounding tablespoonful (not teaspoonful) to each gallon. The water should be at least ten inches deep in the tub. Before dipping be sure you have every fowl. If one gets away postpone the operation until another day when not a single fowl escapes the dipping. One fowl not treated will re-infest the flock.

How to Dip

Catch the fowl by the two wings over the back and lay it on its side under the water with the head out. With the free hand ruffle the feathers the wrong way so as to allow the solution to reach the skin. It is not necessary completely to soak the fowl. Duck the head a couple of times quickly (without strangling), let the bird drip a little and let her go. In an hour or an hour and a half on a warm day the fowls will dry without a chill. Four or five days later the fowls treated will have no lice.

When you buy a new rooster and a new gobbler, treat them with the dry powder before turning them with the clean flock.

Sodium fluoride can be purchased at most drug stores. If your druggist does not have it in stock ask him to order it from the nearest wholesale house. If you are not near a drug store try a mail order house.—R. W. Wells, Animal Parasite Specialist, Bureau of Entomology co-operating with the Agricultural Extension Service.

Birds of a Feather Flock Together

And are so pleasing to the eye, that one often wonders why there are so many mixed flocks. The poultry raiser who selects and "sticks to" one breed has a great advantage over his neighbor who keeps a nondescript lot of scrubs and mongrels. But be sure to pick a breed you like and can handle successfully. Don't keep some certain breed merely because Mr. So-and-So made a big success with them.

Applied Patriotism

Woman has made herself indispensable to the Nation's war activities. This is being demonstrated daily in many splendid ways. The telephone operator takes her place in the front ranks of our "national army" of women.

Back of the scenes, invisible, her war work is to make telephone communication possible. Through her the Chief of Staff in Washington speaks to the Cantonment Commandant in a far-off state. The touch of her fingers forges a chain of conversation from Shipping Board to shipyard, Quartermaster General to supply depot, merchant to manufacturer, city to country, office to home.

Without her this increasing complexity of military, business and civil life could not be kept smoothly working. Hers is patriotism applied. She is performing her part with enthusiasm and fidelity.

The increasing pressure of war work continually calls for more and more telephone operators, and young women in every community are answering the summons—cheerfully and thoughtfully shouldering the responsibilities of the telephone service upon which the Nation depends. Each one who answers the call helps speed up the winning of the war.

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HERCULES DYNAMITE

is what you need to help you work *your* place this season. I used to try to do all my heavy work by hand too. Dug post holes and ditches and the holes to plant my young trees in until my back was nearly broken. But no more of that for me. *I use dynamite now.*

Last year I sent to the Hercules Powder Co. for their book "Progressive Cultivation." It's easy to get—they send it to you *free* if you sign and send in the coupon that is printed at the bottom of every one of their advertisements.

Better send for this book. It tells you all about the use of dynamite on the farm and in the orchard."

HERCULES POWDER CO.
1026 Chronicle Building
San Francisco California

Hercules Powder Company, 1026 Chronicle Building, San Francisco, Cal.

Gentlemen: Please send me a copy of "Progressive Cultivation."

I am interested in dynamite for _____

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Address _____

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The Federal Land Bank of Berkeley, California

When answering advertisements, always mention Orchard and Farm.

System in Shop, Office and Field

Acorns for Hogs

IN our December issue, we asked for the experiences of our readers in fattening hogs on acorns. Among the replies received is the following from O. W. Sanders, Philo, Cal.:

"In this county many hogs are fattened on acorns. I do not know how many can be carried on an acre of oak land, as in my experience they have always had other additional range or pasture. A hog will begin to increase in weight as soon as the frost causes the acorns to fall and, if there is an average yield, can be maintained on them during the winter.

"The meat of hogs so fattened is of good flavor, but soft, and some kinds of acorns seem to cause the lard to be very oily; this is excellent, however, if mixed with a little tallow. I turned a few hogs, weighing 1070 pounds altogether, into an acorn pasture for three months, and when they were taken out they weighed 1800 pounds, a gain of 730 pounds, or about 263 pounds a month.

"Have had considerable experience in making bacon and smoked ham from acorn-fed hogs. When they are to be used for this purpose it is best to feed them grain for a few weeks before butchering, in order to make the meat more solid."

Another's Experience

E. V. Price, a Miranda (Humboldt County) subscriber, also advises that the fat produced from acorn feed is very soft and oily, and points out other difficulties involved in feeding acorns.

"The acorns cannot be depended upon," he writes. "The trees may be loaded and everything look favorable. One may have a fine lot of young hogs ready to turn out when the acorns begin to drop, only to find that during the latter part of July or the first of August a very hot period lasting three or four days will blight the acorns and cause them to fall off with no nourishment yet developed in them.

"If there is a medium crop the hogs will wander far from home and run off as much fat as they accumulate in trying to rustle their sustenance. In other words, a medium crop of acorns is nothing more than a maintenance ration.

"About once in three or five years there will be a heavy crop. In that case it is often impossible for the hogs to eat them all and many of the acorns will lie on the ground until spring.

"Usually, when hogs are turned out to eat acorns, no matter what kind of a crop there is, they become scattered all over the mountains, and in gathering them up one will find that he has suffered a loss of from 10 to 25 per cent. Some become wild and stay away, but frequently, I regret to say, many of them contract what we call 'barrel cholera'; that is, they find their way into someone's pork barrel.

"Slaughterers do not like acorn-fed hogs. If they are to be sold to the butcher, it is advisable to feed them hard grain for at least a month before offering them for sale.

"Experience has taught me not to depend on acorns, but to have three or four small alfalfa pastures, fenced separately, so as to use one at a time. Supplemented by a big patch of carrots, beets, pumpkins or squashes, and a good-sized field of corn or barley, this makes a much more dependable fattening ration than acorns. I believe that a man cannot succeed at raising and fattening hogs where he depends upon acorns entirely."

An Unusual Gate

ON most ranches the gates are a source of continual expense and inconvenience. This is especially true when wide hayracks are used; if the gates are not made very wide, the racks frequently strike the posts and tear out the hinges. On the other hand, if exceptionally wide openings are used, the gates are so heavy that they sag and break.

On one mountain ranch, where just these conditions had been tolerated for years, the owner finally solved the problem by constructing a very wide double gate, embodying a number of unique ideas. By dividing the gate into two parts, he was able to use a wider opening. There was, moreover, no sagging, each section being lighter than the ordinary single gate.

The ordinary post hinges were done away with entirely. Each gate-post was set in concrete, which was extended enough to provide a resting place for the pivot-post (A) of the gate. Into this extension of concrete was set an iron socket which was nothing more than an old spindle from a small wheel.

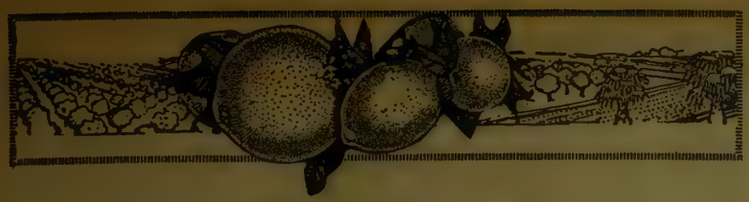
This Hingeless Gate

Cannot Sag and Is Wide Enough to Permit of the Passage of a Large Hay Rack Fully Loaded

An iron pin, driven into the bottom of the pivot-post (which was banded with iron to prevent splitting), when engaged in the socket, served as the bottom hinge of the gate. The top of the pivot-post (A) was held by means of poles and boards (B) as shown in the illustration. The poles also acted as a double brace, to hold the gate-post rigid and to connect it with the next post along the line.

The gates themselves were made of two-inch boards, mortised into the pivot-posts, and strongly braced, and were put together entirely with bolts. The gates were held together when closed by means of a sliding board (C).

After several years of use this gate shows no signs of sagging and has never interfered with the passage of the largest load. It will soon be necessary, the owner believes, to replace the small boards which form the upper hinge, a simple operation.



An Efficient Orchard Plan

Checking up the individual records of livestock is a part of every successful breeder's method. But how many orchard owners know just what each individual tree is doing? A Berkeley subscriber describes an interesting method of "keeping tab" on every tree. Perhaps you can put this plan to work in your own grove.

To Orchard and Farm:

I have originated a plan for watching the condition of my orange grove which could be used in any orchard and which may be of service to others.

I bought a piece of Bristol board 22x28 inches and divided it into four parts representing the four sections of my grove. These pieces I cut off separately, as the full sheet was too cumbersome for my purpose. Each piece was marked to represent a designated quarter of the grove; for instance, "north grove" or "south grove."

The trees are set out on the square plan; therefore, I lined off the entire grove on the diagram in half-inch squares. In these squares I represent, in colored crayons, each separate tree. I use red for old trees; orange for those between 4 and 8 years of age; green for those from 1 to 3 years old; yellow for grapefruit; blue for seedlings; lavender for tangerines; brown for Valencias, and black for any dead tree. At a glance I can tell just where my various kinds of trees are situated.

If a tree has scaly-bark, I place an "S" in the corner of the square. When it is treated, I draw a line through the "S." If it has gummosis, I write "G" in the square; similarly, letters may be used to designate any condition.

Checking Production

When the crop comes in I designate a high-producing tree by a check mark; a tree producing poorly is designated by a cross (X). If a certain tree for some unknown reason produces a light crop (especially a young tree) I mark the square with a question mark (?). This tree is watched the next year, and if it continues to be a drone or light producer is taken out or budded over.

In addition to this diagram, I have the trees indexed on a card system. I use colored cardboard corresponding to the crayon colors; at a glance I can easily find any tree. Each bunch of cards representing a row of trees is secured by a rubber band; they are all kept in a box according to rows.

I find the cards easy to work with in the field, and with them I can keep detailed information about any special tree so that it is very easy to "keep a line on" all problems. This is the way one of the cards reads:

North Grove Row 19
Tree 6

Pruned heavily, Nov., 1918; slight chlorosis; removed large stone under tree; root crown to be exposed; X (indicating that in 1918 it did not produce well).

The cards are for ordinary use, and more may be added as additional information is gained. The chart, on the other hand, is rather a stationary device and, once made, will last for years.

This system has been a great help to me in checking up production and scaly bark. If I find an entire row or several rows in one section of the grove marked "S" I know I must concentrate my attack. Now I have a fine working knowledge of 1345 trees, of which before I knew very little.—J. L. James, 17 Eucalyptus Road, Berkeley, Cal.

Pruning Old Peach Trees

E. E. Foss, one of the most successful peach growers in the Rogue River Valley of Southern Oregon, contributes the following excellent ideas in regard to the pruning of old peach trees, a problem which many orchardists find very difficult of solution:

"Peaches do so well in this locality that the trees sometimes live to be twenty or thirty years old. A few of these old trees are immensely productive, but most of them have grown too high-headed to be profitable. The tendency of a peach tree is to send most of its sap to the highest central limbs, the lower branches dying each year as new ones develop above. This lifts the top higher and higher, increasing the cost of caring for the tree and picking the fruit, and causing wind damage and sap lift.

"To keep the branches low down and spread out is the chief problem in pruning peaches. Not only should the top be severely thinned out, but some of the larger, higher limbs in the center should be removed each year and the rest of these high, central limbs cut back to a short stub. New sprouts which appear low down on the main framework of the tree should be carefully cherished and when they are two or three years old one of the main limbs may be sawed off just above the sprout. Each of the main limbs should be cut back in this manner in succession every few years. This brings the bearing wood low down, giving the tree a fresh start and preventing high-headedness."—O. H. B.

A "Skinner's" Tip

To Orchard and Farm:

In loading hay or doing any kind of work where a team, hitched to a wagon, has to stand with loose lines a great deal of annoyance is caused by the horses getting one or both lines caught under the tongue or neck-yoke.

This trouble can be prevented by attaching to the tongue a piece of old rubber hose; this should be fastened to the top at the end, and allowed to hang over about 18 inches.

When the lines drop down, the hose prevents their getting under the tongue, and when they are tightened up again they will pull up in place without catching.—Tulare Farmer.

Growing Green Feed

To Orchard and Farm:

Here is a simple method of producing green feed right in your chicken yard:

Dig a trench about a foot deep and as long and wide as you think best. Make the soil fertile and damp and spread thick with alfalfa seed. Cover with fine, strong netting and leave to grow. When the plants come up through the wire the poultry will have crisp, fresh greens all the time, with no trouble to you. Barley and oats are also good and quick growing.—Mrs. H. Ament, Santa Monica, Cal.

Are your feed boxes properly constructed? Horses waste thousands of dollars' worth of grain annually.

Think of Gears that Operate without Oil.

In the joints of the human body, where bone meets bone, Nature has provided a protecting layer of cartilage surrounded with a lubricating liquid. For Nature knows that friction and wear would result if the joints were left unlubricated.

For years mechanical practice has called for lubrication at all points where moving parts come in contact.

AMSCO Manganese Steel—"the toughest steel known" has overthrown all precedents. *It defies wear.*

As proof of its amazing wear-proof qualities, gears and pinions of this metal are operated *without oil.*

AMSCO—"the toughest steel known" is today proving its durability on Crawler Tractors. It is being used for such important parts as shoes, links, pins, grousers, lags, spacing blocks, sprockets, idlers, rollers and transmission gears on Crawler Tractors. On wheel tractors it is being used for bull gears, pinions, sprockets and transmission gears.

See that the tractor you buy is fortified with AMSCO parts at the vital points.

NOTICE—We have recently published a booklet, "Tractor Parts," illustrated and done in colors, which will give you some good, practical points and pointers. We're mailing it Free; also a list of Tractors fortified with AMSCO. Write us for it.

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Largest Manufacturers of Manganese Steel Products in the World.

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Easy Ditching

THE "good old days" of a pick and shovel have become memories. Instead of spending a week on a mile of ditch, Mr. Farmer now completes the job in a few hours. He does a better job, too—and saves a BIG LOT of *valuable* time. He does it with

THE Martin

DITCHER, Grader and Terracer

Makes new ditches; cleans old ones; grades roads; builds dykes and terraces. Cuts alfalfa, Bermuda grass or sweet clover roots from ditch banks, without plowing. Does more work and better work than 100 men with old methods.

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All steel. Reversible. Adjustable. No wheels, cogs or levers. More MARTINS now in actual use than all other farm ditchers combined. Warehouses and distributing points in nearly all Western States. Write for free descriptive catalog and nearest distributing point, together with list of MARTIN users near you.

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Yours Must Do YOUR KIND OF WORK

Read this Tractor Book

REMEMBER there is real profit only in the right tractor for *your needs.* Merely "a tractor" may be an expense rather than a good investment.

We have designed the Bean TrackPULL to meet *special needs* in *orchards and vineyards* after building orchard and vineyard machinery *for 34 years.*

The Bean TrackPULL Tractor will be as famous as the noted Bean Power Sprayer when as many are in use.

Don't buy a tractor built for general purposes, no matter how little the purchase price; for the cheapest by far is the special tractor designed to *do your kind of work.*

Send the coupon below for illustrated book which will prove what your choice should be.

Compare the BEAN features with those of other tractors and decide then which one you'll buy. Don't purchase any tractor until you have done that, for it will save you money in up-keep cost and crops.

Turns inside 10-foot circle with full power—tools down deep all the way around. You turn right back in same row.

Runs under tree branches only four feet above ground.

Makes no difference how far off-center you hitch.

Handles like team; so easy boys can drive.

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"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.

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FOR GREATER EGG PRODUCTION
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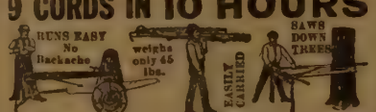

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INVESTOR PUB. CO., Dept. I, San Antonio, Texas.

FISH Salmon in brine, 100 lbs., $14.00. Shipping weight, 175 pounds. Smoked Salmon, 20 lbs., $4.00. Dried codfish, 10 lbs., $1.75. T. A. Beard, 4322 Winslow Place, Seattle, Wash.

Moving the Earth

THOSE who have visited French farm lands report that the fields that once yielded abundant crops seem blasted beyond all hope of recovery. The pockmarks of the small shells are everywhere, and at frequent intervals are huge craters, yards across and many feet deep, where the larger shells have exploded. At some points entire farms have disappeared, for here the troops sank their mines which when fired engulfed whole companies and entirely changed the contour of the land. The fertile top soil is gone, buried beneath the upturned sterile clay and sand. Back and forth across all this devastation run endless mazes of trenches, man deep, with earthen ramparts before them, cutting up the fields until plowing or cultivating seems an utter impossibility.

The Versatile Tractor

Such is the condition in which returning French and Belgian farmers will find their once fertile acres. It will be a disheartening sight, for with the old horse and scraper method of leveling, it would mean years of work before the land would again be fit for cultivation.

Here is where the American farm tractor will drop its war charge, the heavy gun, and go to work for those simple peasant folk. Hitched to a big land leveler, it will cut off the earthen ramparts, fill the trenches, craters and shell holes, and cover the leveled surface with a goodly layer of productive top soil.

A Dominant Factor

Leveling of land does not involve the terrors that it once did. Filling trenches would have been almost a hopeless task before the advent of the tractor. In fact, some of the ordinary farm leveling, which is now done almost as a matter of course, would seem formidable indeed without tractor power.

The rancher who has a big leveling problem and fails to take into account the power of the tractor is lacking either in foresight or in good business judgment. And that is "on the level."

Does It Pay?

Does it pay to house farm machinery? To get an answer to the question, ask the farmer. The opinion of about 200 successful farmers is shown in the following table compiled by averaging their replies.

Machine.	Average life in years. When housed.	When not housed.
Cultivator	12	7
Corn planter	17	7
Binder	14	7
Disc harrow	15	8
Dump rake	16	7.5
Side delivery rake	12	8
Drill	14	6.5
Plow	14	9
Hay loader	15	7
Manure spreader	12	6
Mower	15	9
Wagon	22	8

It is surprising after getting a statement of this kind, that shows a doubling of the life of almost all ordinary machines, that there is so much hesitation on the part of farmers to house their equipment properly. Paint and adequate protection from the elements are cheap forms of insurance for expensive machinery.

Sources of Trouble

"From the answers to questionnaires sent out by the Department of Agriculture to farmers, I found that from 2179 reports the question, 'What part of your tractor gives you the most trouble?' was answered as follows," said Junius F. Cook of the U. S. D. A., in a recent address before the National Implement and Vehicle Association.

Magnetos	299
Spark plugs	110
Gears	108
Carburetor	104
Bearings	80
Cylinders and pistons	61
Clutch	59
Valves and springs	43
Lubrication	29
Starting	28

"This information gives one a good idea of how to examine a tractor with the view to buying or studying the machine. It will be seen from this return that one can eliminate at once a great many details and concentrate attention upon the above, which may be considered the main points of trouble. It seems to me that if I were buying a tractor I would make it my business to study magnetos, spark plugs and carburetors enough so I would know not only the best for me to use, but how to use them when I received my tractor."

J. C. Stuart

Who made $300 last month by acting as field agent for Orchard and Farm. Although he is one of our most active representatives, Mr. Stuart is not the only one who is making big money.

"I started the work during spare hours," said Mr. Stuart upon a recent visit to the office, "but results were so encouraging that I now devote all my time to it. Anyone who thinks the work is not profitable and interesting has another guess coming! Orchard and Farm comes nearer to selling itself than any paper I know of."

"Fixing" the Tractor

Many tractor manufacturers are paying more attention to the preparation of instruction books, to the end that repair and adjustment work may be simplified for the owner and less expert service required. "The book which accompanied my machine is about as intelligible as a Chinese puzzle," one of our readers complains. There is undoubtedly plenty of room for improvement along this line. The ordinary purchaser is perfectly capable of caring for the machine himself, provided he has a clear and intelligible reference book which will answer his questions immediately and explain the various parts and their functions in a non-technical manner. In overhauling the tractor in such a manner as to "have no parts left over when it is put back together," manufacturers recommend that the owner go over one part at a time and put it together again before tearing down any other section of the machine.

Overhauling the Machine

"The tractor should be in a place where it is comfortable to work and the tools and equipment needed should be handy. Boxes should be provided in which to put every piece, no matter how small," says an experienced tractor service man.

The instruction books furnished with many machines give directions for such repairs as renewing bearings, replacing piston rings, grinding valves, etc. The function of the instruction book is naturally limited, but the present tendency is to make everything that is included in it specific and plain and the coming year will see more attention paid to "service." No book could make an expert mechanic out of a novice, but the manufacturers are almost unanimous in their agreement that the owner can and should do most of the repair work. The farm tractor is less complicated, as a rule, than the automobile, and easier to adjust and repair.

New Contact Insecticide

Through the combining of nicotine and oleic acid, a new contact insecticide termed "nicotine oleate" has been produced. It is soluble in soft water and forms a soapy solution that may be used to emulsify an animal, vegetable or mineral oil.

In certain tests 2½ quarts of a 40 per cent nicotine solution was combined with 1¾ quarts of commercial oleic acid to make 1¼ gallons of "nicotine oleate."

This is said to be more effective against aphids than a spray of free nicotine, and it costs only about one-half as much to prepare.

It should not be used on plants that are to be used for food, such as lettuce, kale or spinach, as the oleate prevents the spray from volatilizing.

On dormant fruit trees, its use with a non-volatile oil, such as linseed, cottonseed, or fish oil should make it valuable for the destruction of eggs of insects and for some scale insects.

Pear Blight and Thrips

In the Rogue River valley of Oregon County Pathologist C. C. Cate is directing a campaign against pear blight by spraying against the thrips, which are considered most active in disseminating pear blight. The spray used is nicotine sulphate 1-800 and distillate oil emulsion 1½ per cent.

Cleveland Tractor

Serviceable the year 'round

The Cleveland Tractor is serviceable *every season of the year.*

It is an all-purpose machine.

When winter weather or crop conditions make the Cleveland unnecessary in the field *its usefulness in other lines of work begins.*

It is tractor and stationary engine in one. It will saw wood, pump, drag logs, haul grading or road-making machinery and do practically everything formerly done during the winter months with horses and stationary engines.

The Cleveland lays down its own tracks, travels on them and picks them up again like the famous battle "tanks." It will go practically anywhere—over rough uneven ground, on the side hill or over soft plowed fields.

A traction surface of 600 square inches with a weight of less than 3200 pounds *effectively prevents the Cleveland from packing the soil.*

You can house the Cleveland in less space than is required for one horse. But in spite of its small size it develops 12 horsepower at the drawbar and 20 at the pulley for stationary work.

Under medium soil conditions the Cleveland Tractor plows 3½ miles an hour with two fourteen inch bottoms. This is eight to ten acres a day—equal to the work of three good three-horse teams and three men.

It burns either kerosene or gasoline.

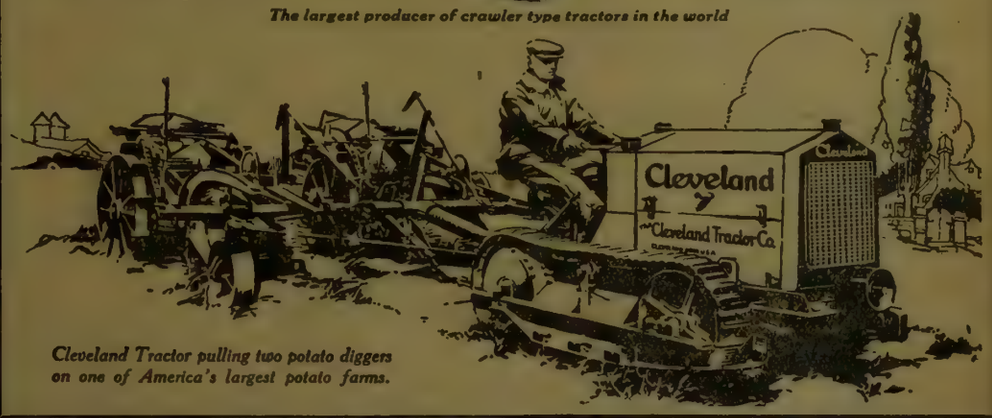
Don't wait till spring to get your Cleveland Tractor. Order it *now* and get the full advantage of its all-purpose, all-season ability *this winter*—and be prepared for the first field work of early spring.

Write for descriptive matter and name of the nearest Cleveland dealer.

The Cleveland Tractor Co.

19081 Euclid Ave. Cleveland, Ohio

The largest producer of crawler type tractors in the world



Cleveland Tractor pulling two potato diggers on one of America's largest potato farms.

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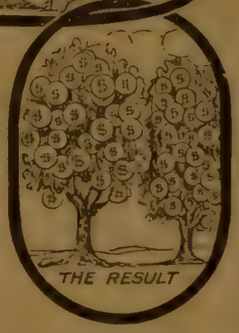

Maximum Yield Big Profits

the result of reading our new illustrated catalog and planters' guide.

Fruit growers, whether experienced or not, will profit greatly by reading our new catalog.

It contains practical articles on preparation of soil—selection of proper varieties—pruning—shaping—irrigation and many other items of particular interest to the planter.

Write to us and let us know your local conditions
—what varieties you have in mind—whether citrus, deciduous or ornamental trees, roses or vines.

Many years of experience will enable us to give you helpful suggestions.

Our new catalog just off the press will aid you materially in making your planting more successful.

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Every farmer who wants to better himself should send for this book to-day!

It contains the signed statements of many ranchers who tell how they are becoming wealthy in the famous Santa Cruz Valley near Tucson, Arizona. About 80% of all products consumed in the valley are shipped in from California. The rich mining camps and the city of Tucson (25,000 population) pay fancy prices for all farm products. Local farmers are getting rich. A very limited amount of land with water (suburban to Tucson) may be had at $150 an acre on long time terms. Best farming opportunity in America. Land selling fast.

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Hardy W. Campbell's valuable book, "Progressive Agriculture," is being offered for sale, including three years' subscription to Orchard and Farm, for $1.25. Mail your order today.

How to Grow Currant Grapes

"A NEW $5,000,000 Fruit Industry for California," as described in our November issue, attracted more attention than anything we have published for a long time. First among the agricultural papers to publish photographs and a complete description of the currant grape and the newly discovered methods of growing it successfully in California, Orchard and Farm has lived up to its reputation for keeping abreast of agricultural progress.

So many of our readers have expressed their appreciation and interest that we have gathered together a number of interesting facts and practical suggestions, designed to assist those who succeed in obtaining cuttings from the Department of Agriculture or from other sources.

Although it is our desire and intention to leave nothing unsaid and to cover in a series of articles as nearly as possible, all problems and processes in currant growing, we will be pleased to take up any questions occurring to our readers which are not clearly answered, and to have the reports of those who have experimented with currants or who decide to embark upon the business of commercial production.—The Editor.

EXPERIMENTS in the production of currants in California have shown that there is no reason to surround the industry with mystery nor to inaugurate new cultural methods. Except for the girdling process, which has been shown to be absolutely necessary for successful commercial production, currants are handled in largely the same manner as raisin grapes.

For the benefit of those who have applied to the Department of Agriculture for cuttings of the grafted Panariti it may be well to outline the best methods of setting them out and caring for them.

Cuttings received during the winter should be wrapped in moss or other material and "heeled in" or placed in a shallow trench until spring. When all danger of frost is passed and the ground has been put in proper condition, each cutting should be set at intervals of 8x8 feet in a hole deep enough to cover or almost cover the top bud, and two or three stakes should be driven around each plant to protect and mark the tender bud when it first comes up. The ground may be cultivated as soon as the cuttings have reached a large enough growth to be clearly visible, the time for the first cultivation depending upon the condition of the ground. No pruning is done until the following winter.

Suitable Soils

The deep-gray alluvial bottom land is considered the ideal soil, but any section where grapes are extensively grown or which possesses the characteristics of grape producing localities may be considered as suitable for currant growing. Of the ideal type of soil existing at the department experiment vineyard at Fresno, the Bureau of Soils has mapped out 75,000 acres near Fresno, 6000 near Stockton and about 265,000 acres in the Sacramento valley. This soil ranges from brown to free sandy loam.

Most of the land in the raisin producing sections of California is so flat that little leveling is necessary. After the land has been leveled wherever necessary, it should be carefully prepared. If virgin soil is used the field may be put in better shape if a crop of grain is grown on it the season before planting. After being plowed and subsoiled, it should be thoroughly harrowed and clod-crushed with a drag or roller. In the early stages of the industry most of the vines were planted seven feet apart each way, but the tendency now is to plant further apart, some setting the cuttings eight feet apart each way and others 6 by 10 feet, 9 by 9 feet, 8 by 10 feet or even wider distances, 8 by 8 feet is probably the most practical planting for currants.

Stakes may be used to support the vines, which allows the grower to plow and cultivate lengthwise and crosswise, this giving an advantage over trellising. Frequent cultivation should be given in the early season, all culture being abandoned after the spring rains are over.

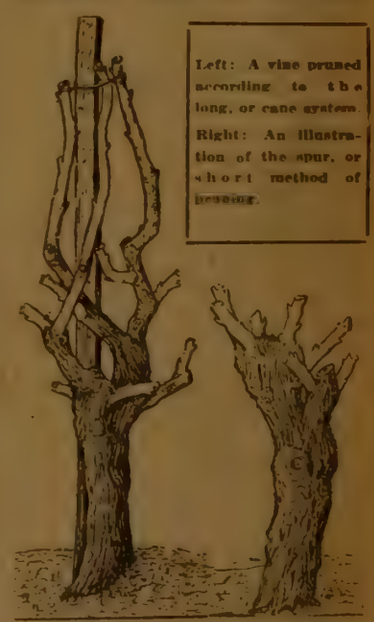
Irrigation Advantages

Well-drained lands may profitably be irrigated, for the use of plenty of water at the right time increases the size and yield of fruit. Under ideal conditions, an acre may be expected to yield from 6 to 15 tons of fresh grapes, or from 2 to 5 tons of dried currants. The average yield is about ten and one-half tons of fresh grapes.

Since they are among the earliest to ripen, currant grapes may be dried and put away before the earliest rains occur in districts where the raisin varieties are too late in maturity for successful culture. In the regions now devoted to producing raisins, the currants may be grown as an early crop, thus affording an opportunity to make the most efficient use of labor.

Pruning Methods

The same pruning methods which are commonly employed in raisin vineyards, may be used with the currant



Left: A vine pruned according to the long, or cane system.
Right: An illustration of the spur, or short method of pruning.

vines. The three ordinary methods are the spur system, the cane system, and spurring laterals on canes. All grape pruning systems have as one underlying principle the fact that the grape vine usually bears its fruit on shoots from wood of the previous season's growth. The pruning should, therefore, be such as to renew the wood at a given point from year to year, thereby regulating its production and keeping the plant well shaped and under constant control. (Any Orchard and Farm reader who desires to make a more complete study of grape pruning may well send to the Division of Publications, U. S. D. A., Washington, D. C., for Farmers' Bulletin 471, "Grape Propagation, Pruning and Training.")

The Spur System

The simplest and cheapest pruning system is that known as the spur, stool or short method. By this method the body of the vine is grown to the desired height and shoots are permitted to grow from only the two uppermost buds. The two resulting canes are cut back in the winter to spurs of two eyes each. The following year these spurs are allowed to produce growth. The resulting canes

(Continued on Page 15)

are again cut back to spurs and all these allowed to remain if the vine is strong enough.

Thus the vine, under ordinary conditions, at the beginning of the fifth year consists of a trunk from which spring four or five arms, on each of which a cane has been cut back to a spur. When the vine is pruned the following winter all, or nearly all, the outer canes that have grown from spurs are entirely removed. The spurs of the last season are cut off just outside the inner canes, which are cut back to spurs, the pruning each winter after this being done to promote a regular system of spur renewal. As the vines become older and stronger and can stand more cropping, more spurs are left to increase the fruiting capacity of the plant.

In course of time, the arms of the respective spurs are renewed and entirely new arms and spurs are grown. The head of the vine should be kept well balanced and given a globular form if possible.

The Long or Cane System

When vines are trained according to the cane system, the fruit is borne on canes which are tied to a stake, the spurs which are left to grow from them producing canes the following year. In pruning, the canes which fruited the previous year as well as the arms on which they grew, are entirely removed, the necessary fruiting canes and spurs being produced from the canes left the previous year. In this manner the head of the vine is renewed from year to year and as the plants grow older and stronger, the fruiting capacity is increased by leaving more canes and spurs.

The third system is largely used with the Sultanina raisin grape, which bears only when pruned to long canes. To remedy the faults brought about by too much shading, these long canes are frequently bent in a circle on the support. It is not of much interest to currant growers for, since the Panariti (or raisin grape) has been found to produce well when pruned to spurs and short canes, it is probable that most growers will use this cheaper and easier system, first described.

As explained in our previous article, the most important process in growing currants is that of girdling. This consists in cutting two parallel incisions through the bark, around either the trunk, arm or cane of the vine and taking out the bark between these parellel cuts. The girdling must be cleanly done, and performed while the vines are in bloom. It is necessary in order to make the blooms set properly and insures a greater yield of higher quality fruit.

Resistant Stocks

In phylloxera-infested territory the currants must be grown on stocks resistant to the disease and congenial to the plant, but soils suited to other ungrafted vinifera varieties may be used for Panariti grown on their own roots. Extensive experiments have been conducted by the United States Department of Agriculture to determine what resistant stocks could be most successfully used. Good congeniality has been found to exist between the Panariti and the Rupestris St. George, Mourvedre X Rupestris 1202, Aramen X Rupestris Ganzin No. 1, Riparia X Rupestris 3309, Salt Creek and Dog Ridge. The latest experiments have shown the Adobe Giant to be an exceptionally successful root stock. The Panariti, grafted on this stock and properly girdled, has produced a tremendous yield. The cuttings now being distributed by the Department are on tested resistant stocks of the above varieties.

To Obtain Cuttings

For the benefit of readers who did not note the directions for obtaining cuttings as published in our November issue, this information is repeated: Address Geo. O. Hussman, Pomologist in Charge of Viticultural Investigations, U. S. Department of Agriculture, Washington, D. C. Only a limited number of cuttings will be available this year. These will be distributed to growers who are willing to co-operate with the Department in experiments.

In a future article, we will discuss the harvesting and curing of the currants, together with other processes and problems which must be dealt with in successful commercial production.

Securing Farm Labor

Farmers throughout the State in need of workers are invited to make use of the College of Agriculture of the University of California as a farm employment bureau. The director of the college has announced that he has received letters from a number of former students, many of whom are graduates, stating that they wish to engage in various forms of agricultural work as soon as they are released from the army. Farmers are urged to write to the Director's Office, College of Agriculture, Berkeley, stating the location, nature and salary of the employment offered. The college will readily render every assistance possible in filling positions.

New Lime-Sulphur Spray

A new combination spray tested during the season of 1917-18 by the Stoke Fruit Growers' Association, of New Zealand, consisted of naphthaline and lime sulphur, with and without the addition of arsenate of lead.

The trees had been badly infested with woolly aphis early in the season, but at picking time (April, 1918) fruit and foliage looked good, the fruit being clean and bright.

In these applications soft water (well water) was used. The addition of naphthaline seems to thicken the spray and promote adhesion. The cost per gallon is the same as ordinary lime-sulphur.

A Pleased Subscriber

"I had rather fail to receive any agricultural paper that I take than Orchard and Farm," said P. J. Burk of Bellflower, one of our valued subscribers, in the course of a call at Orchard and Farm office. It seems that he had failed to receive his November copy and had called especially to find out about it. The fault was evidently in the mailing, as the name was correctly listed. Sometimes the papers do go astray in spite of all we can do. You can readily understand this when you consider that we have over 40,000 to send out every month. If you do not receive your paper regularly, please let us know, as we are anxious to keep all subscriptions correct and up to date. Also, do not fail to advise us promptly of any change of address.

The hen's greatest profit-producing period is during the first and second years, and unless a hen is an exceptionally good breeder she should be disposed of at the end of her second laying season, before beginning to molt. Few eggs can be expected until the pullets are matured.

Rabbit meat is no longer a substitute. It is an esteemed delicacy.

Another "Black" International!

Aberdeen-Angus won Grand Championships over all breeds on SINGLE STEER, Steer HERD, CARCASS and BOYS' and GIRLS' Calf, losing only Fat Carlot (first time since 1909). The interbreed Grand Championship standing of the world's greatest show is now 11 out of 17 for Single Steer, 12 out of 15 for Steer Herd, 13 out of 17 for Fat Carlot, and 16 out of 17 for Carcass, in favor of the Aberdeen-Angus. Write for "Results of Internationals."

ABERDEEN-ANGUS: First in War, First in Peace, First in Reconstruction!

AMERICAN ABERDEEN-ANGUS BREEDERS' ASSOCIATION
817 Exchange Ave., CHICAGO

EDITORIAL DEPARTMENT OF ORCHARD AND FARM

~ TIMELY TOPICS AMONG FARM FOLK ~

J.C. Knollin, Editor

Our Editorial Policy

Farmers First

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things; looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

Let By-Gones Be By-Gones

WHAT was the matter with the Federal Farm Loan Banks? We use the past tense, because we believe that the difficulties which arose during the first few months of their existence have largely been overcome.

The system has not been changed; the regulations are the same; yet there is less and less complaint and dissatisfaction, while the loans are increasing rapidly. The total loans closed up to November first amounted to $139,378,156; of this amount the Berkeley bank had distributed $8,502,000.

Probably just one word will describe the reason for this improved situation: Publicity. The farmers are gaining a better understanding of the purposes and limitations of the Farm Loan system; consequently they know what to expect and how best to take advantage of the opportunity.

Perhaps the originators of the plan did not realize the importance of advertising. Had it been a private project, it would probably have been "put over" with little confusion and misunderstanding, through the medium of an extended and comprehensive publicity campaign.

Perhaps the lack of publicity was due, rather, to the fact that those who had worked out the plan, seeing it all very clearly in their own minds, did not realize that it would appear hopelessly complex and unwieldy to the farmers whom it was expected to benefit. The fact that the Federal Farm banks are now practically all "on their feet" and the loans constantly increasing apparently justifies the principles upon which they were founded, for they have succeeded IN SPITE OF having had to overcome needless and very serious difficulties.

Although our Government never advertised before, and "did not believe in advertising," it became in a few months during the duration of the war, the GREATEST ADVERTISER IN THE WORLD. As a result, all the various drives to raise funds, the food conservation program, the campaign for increased production and the many other aims and policies necessary to the winning of the war were made a success.

The very means of disseminating information which were denied the farmers for whom the system was established, were recently used to dispose of an issue of farm loan bonds. Orchard and Farm carried some of the large ads which were used in farm papers throughout the country. As a result of this campaign an entire issue was sold in three weeks' time.

But publicity does not mean simply the use of advertising space. Had the Government, in establishing the system, sent speakers out to attend meetings of farmers, issued circulars and posters, arranged for a series of clear, concise articles in various newspapers and magazines, and made provision for reference bureaus where all questions would be answered, instead of sending broadcast a jumble of technical, uninteresting news articles, which some papers used and some did not, the loans would probably be double what they are now and there would have been little if any of the bitter misunderstanding and disappointment which has characterized the dealings of many farmers with the banks. True, a feeble effort was made to acquaint the prospective borrowers with the workings of the system, but it was entirely inadequate for such a tremendous innovation.

But "there is no use crying over spilled milk." Let us regret but not dwell upon past sins of omission or commission.

Figures do not lie. The banks are a success. Ponderous and unwieldly, new and untried, the Farm Loan system, in the face of opposition and discouraging difficulties, has literally been dragged over the rough places by its officers. Now it may truthfully be said that "the worst is over." There is still plenty of criticism, but most of it may be traced to private capital which cannot but note with alarm the "three years and 10 per cent" victims who are slipping from its grasp into the haven of "cheap money and 30 years to pay."

Although one occasionally meets with bitter complaint from would-be borrowers, it may be said, generally, that failure to secure a loan from the Federal Land Bank or dissatisfaction with the accommodations received from it indicates now, not that the plan is a failure, but that the complaining farmer does not understand its workings.

The system is not elastic. It was arbitrarily established by law, and must follow to the letter certain requirements of the act. Whether these requirements are burdensome and non-essential, or whether they are far-sighted and necessary are questions which cannot enter into present application.

One idea which seems to be quite prevalent is that the banks are loaning Government money. This is not so. Their funds are raised by the sale to the public of bonds, which must be backed by security having a wide margin of safety. Since this is true, no loans can be hastily closed, and no farmer can be dealt with who is not willing and able to meet all requirements. There can be no exceptions; no favors.

Another mistaken impression is that the banks are essentially a public institution, manned by officers who, as Government employes, should conduct themselves as public servants. It is a short-sighted or uninformed farmer who says: "I now have a right to borrow some of the money in the public treasury, and as a taxpayer I am entitled to immediate consideration, special service and a vote as to how my case shall be administered." It is just such ideas which bring about dissatisfaction.

The Federal Farm Loan system is an innovation; it must not be judged by private customs or institutions; it must be dealt with as it is, NOT AS WE THINK IT OUGHT TO BE. Its officers are not public servants, loaning public money; they should not be expected to meet emergencies, nor make exceptions for the benefit of the individual. They have no choice but to follow a prescribed system and they are doing this to the best of their ability, and, it must be added, with considerable success.

He Didn't Quite Make It

"POOR OLD JOE," exclaimed big-hearted Dave Johnson, as a bent, decrepit figure shuffled out of Jud Whitson's store, where Uncle Wiseacre and his friends were having their usual Saturday evening chat.

For a few minutes they watched the retreating figure in silence. Presently Uncle Wiseacre's feet and the front legs of his chair came down simultaneously on the floor with a bang. "Poor Joe, nothin'!" he exclaimed impatiently, to the surprise of his companions. Accustomed as they were, however, to the old philosopher's eccentricities, they merely awaited expectantly his next words. Rather excitedly, for him, he scratched a match on the sole of his boot and applied it to his cob pipe.

"The world is full of 'poor Joes,' who are among the Has-beens and Might-have-beens jest because they never caught up with th' percession," he announced with some heat. "And it ain't nobody's fault but their own. Show me a down-and-outer an' I'll show you a feller who all his life has been jest a little too late.

"Now, I knowed Joe, there, when he was younger, an' he had jest as much opportunity as th' rest of us, but he never caught up to it an' he never will. He's got so used t' being at th' tail end o' everythin' now thet he don't know they's any room at th' front.

"An' it's all because he was always jest a little too late. He never got his crops in quite in time and never harvested quite soon enough. He always had a good explanation, but thet didn't increase th' yields none! Every year he was a few weeks late payin' his taxes and a few days late settlin' his notes. His favorite expressions was: 'Now, how come I t' fergit that?' and 'I didn't quite make it.'

"'I was goin' t' clear some land, er do some fall plowin', er fill up them ditches in th' road,' he would say, as th' case might be, 'only I didn't quite make it.' Thought maybe he could do it next year; hoped his luck would change; didn't worry none 'cause there was lots of time!

"Oh, yes, boys, there's a lot o' 'poor Joes' in this world. They blame everybody but themselves fer their hard luck, an' while they are pokin' along waitin' fer old Father Time t' slow down so they kin ketch up with him, that foxy old gentleman gets clean away from them. I reckon when Joe's time comes an' he goes up t' knock at St. Peter's gate, he will arrive there jest after closin' time. An' as he plods along on the weary downward path thet leads t' less invitin' regions, he'll be mutterin' to himself: 'Jest my luck! I didn't quite make it!'"

Grain in Bulk

BULK handling of grain involves important changes in every step of the process through which it passes in the ordinary channels of trade. Not only must the farmer adopt new methods, but there must be installed special equipment at warehouses and terminals, and many elevators of different kinds and capacities must be constructed. The ocean terminals and even the vessels engaged in grain transport have to be remodeled to a greater or less degree.

In spite of the cost involved, however, the middlemen, or shippers and handlers of grain, have long been ready to make the change. It is the farmers who have clung to the use of sacks, not through lack of foresight (as certain bulk handling advocates insinuate), but simply because they have always been accustomed to the bags, and have had no financial inducement to change their ways.

But now that labor and sacks have so advanced in price and diminished in supply, the inducement which was formerly lacking is exerting a powerful influence, and as a result, many grain growers have discarded bags during the past season, with very satisfactory results. Perhaps the war has actually brought about a reform which from the broad, economic viewpoint was badly needed, and which no other influence, except Government orders, could have accomplished. For very few farmers who change to the bulk method ever return to the use of sacks.

The New Bulletins

THE latest example of the tail wagging the dog is furnished by the United States Department of Agriculture. This tremendous organization, built up ponderously from a great number of ill-fitting units and strongly bound 'round with red tape, recently found itself being left behind by the very farmers whom it was supposed to lead and advise.

That its awakening to its true sphere of usefulness has been thoroughly accomplished, however, is indicated by the fact that the department is now working more with than at American food producers. Instead of sending out stiff-collared, desk-trained experts to tell the farmers, who invariably resented the intrusion, how to conduct their business, the department has established a far-reaching plan involving the very co-operation which it preaches to the farmers and based on the county agent system. This system brings about co-operation between county and State through the State University, and thus by taking into account the State University, connects the entire system in the most logical manner with the department at Washington. More field work and less desk work is another noteworthy sign of the times.

But perhaps the best indication of how the great federal machine has had to tighten its bearings, oil its gears, and speed up its wheels in order to keep up with American farmers, is the change in form of the Government bulletins.

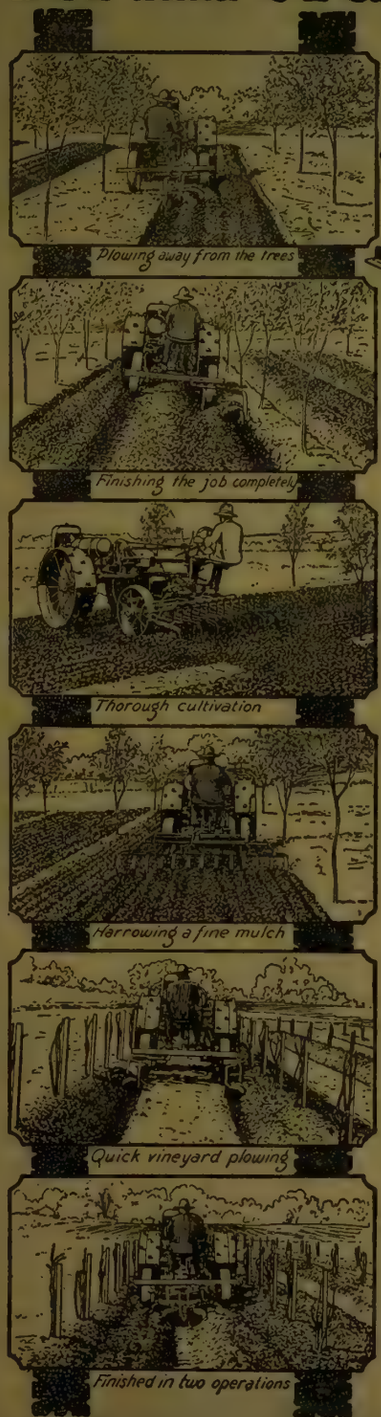
The 1000th bulletin was recently issued. Instead of being a dreary, uninteresting, unattractive treatise of 75 or 100 pages, couched in Latin and technical terms and dripping with learned advice given in a patronizing manner, the new type of bulletin is a readable, attractively illustrated, condensed text book, including not only reports of the work of the department's experts but also accounts of the practices and discoveries of practical farmers. Thus the bulletin has become the instrument of a "clearing house," for passing along the good methods successfully used in one section of the country to farmers in other sections.

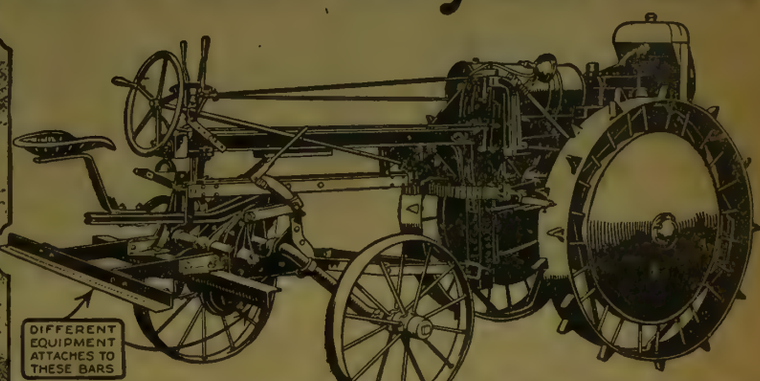
The best thing perhaps about a Democratic form of government is the opportunity that it gives for individual advancement and expression; this very force tends to prevent the establishment of arbitrary, hide-bound government agencies. That branch of our Government which is hopelessly behind the times and fails to recognize the fact will inevitably, sooner or later, be cast into the discard. Fortunately for the department and, we may add in all fairness, for American agriculture, this important bureau finally came under the control of far-sighted men who switched its activities upon the right track before it met disaster.

It is a great and important institution and now that the tremendous importance of food-production has been so strikingly brought out by war famine it is destined to become even more influential.

Probably never again (and we say it in all respect and thankfulness) will the Department of Agriculture approach so near to the brink of oblivion as it did during the "dark ages" just left behind.

One Tractor and One Implement For All Orchard and Vineyard Work





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UNIVERSAL TRACTOR and ATTACHOR

With this one outfit the orchardist and vineyardist can do practically all their work and one man can do much more work at less expense than ever before possible.

The Moline-Universal Tractor Attachor is made to work in connection with the Moline-Universal Tractor so that one man has control of both tractor and implement. It consists of an attachor truck equipped with a power lift device and a pair of transverse bars to which can be attached the following equipment: Orchard Gang Plow, Offset Sulky, Straight Sulky, Orchard or Alfalfa Cultivators; Spring Tooth Harrow in two, three or four sections, Furrow Irrigator for orchard or vineyard work, Ridge Irrigator, Vineyard Gang Plow and Crust Breaker.

Thus this one implement does away with all special tools which are used for only a few days out of the year. The Moline-Universal Tractor Attachor combines the main parts of all these machines such as wheels, axle, frame, lifting device, seat and control mechanism. The saving in expense is apparent.

But the improved quality of the work which can be done with the Moline Universal outfit and the saving in time is of greater importance.

For orchard plowing the gang plow is used and the land is plowed as close as the branches of the trees will permit. Then the Offset Sulky or the Straight Sulky is attached in place of the gang plows and the last furrow or two are plowed out right up to the tree trunks. Plowing can be done away from or to the trees in this manner. After plowing the Orchard, the Cultivator or Spring Tooth Harrow can be readily attached for making a fine mulch. And if irrigation is practiced, furrows or ridges are quickly made by attaching this equipment.

For vineyard work, Moline-Universal Attachor enables a better quality of work to be done, and quicker and cheaper than ever before possible. The vineyard plow consists of a pair of right and left hand bottoms. These bottoms can be spaced wide apart or close together to suit any vineyard rows from 6 to 10 ft. apart. In two operations, with the bottoms spaced wide and close together, all the land can be completely plowed between the rows. Then by using Spring Tooth Harrow and Furrow Irrigators the entire vineyard work can be finished completely.

The Moline-Universal Tractor is especially well adapted to orchard and vineyard work, being light in weight, extremely powerful. All moving parts are fully protected from dust and many other features which other tractors do not have. Aside from this work it can be used for any farm work, including cultivation of row crops and for belt work.

This Moline outfit will make you more profit. If you are interested in orchard or vineyard work, send for folder R. F. No. 84 which explains in detail just how the Moline-Universal Tractor and Attachor are used.

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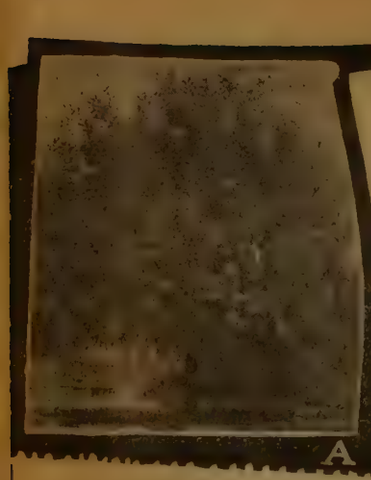
Yuma, Arizona.

"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.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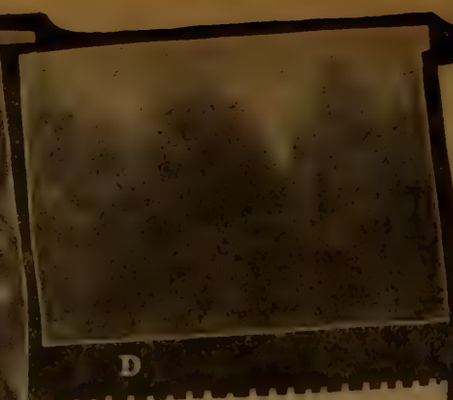
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Read Why Armstrong Trees Pay So Well

(ILLUSTRATIONS ABOVE)

A—CAROB TREE. "St. John's Bread." Our named varieties are budded from the best fruiting type having a high sugar content. Full information and descriptions in our 1919 Catalog.

B—GRAPE FRUIT. Every home garden should have its grape fruit trees. Our Marsh Seedless grape fruit trees bear the true large flattened type of fruit.

C—ROYAL APRICOTS. Only in California are apricots grown extensively. The demand is increasing —growers are organized. Write us regarding our XX trees, propagated from the large fruiting tree strain.

D—PEACH TREES. In nursery. Twenty-seven choicest varieties ripening early to late, described in our Catalog. We would be glad to advise as to the best varieties for your location.

E—LYON AVOCADO. Considered one of the best thick-skinned varieties. Our 1919 Catalog describes twenty of the most dependable avocados, including the hardiest sorts. Our method of growing insures perfect root system.

F—LOS ANGELES ROSES. Color a glorious rich flame pink. See Catalog for full description, also of our one hundred world's newest and best roses. All field grown—strong two year—bloom early and profusely.

G—GRAPES. One of the many grape vines in our test vineyards. We offer over forty varieties, including four excellent new French table sorts. Do you have all the grapes you want to eat from your own garden? If not, plant some of our vigorous, well-rooted vines.

H—QUINCE. Picture of three-year Smyrna Quince from our nursery. The quince is one of the many deciduous fruits that should be planted in every garden with Plums, Prunes, Nectarines, Pears, etc. All the tested California varieties of these fruits are listed and described in our Catalog.

I—MANZANILLO OLIVES—Our reputation for supplying the most dependable olive trees in California is well known, but here is the proof. One of many such letters in our files.

> "Of 30 acres planted to olive trees last spring from your nurseries, all are growing fine. NOT ONE will be required for re-planting.—J. S. DOUGLAS, Superintendent Kern County Land Company's Orchards, Bakersfield, California, December 5, 1918."

J—EUREKA LEMON. Armstrong expert selecting fruit bud wood from a tree having the highest three-year production record for quality and quantity. The same method is used in selecting all citrus tree buds. See our Catalog for detailed information.

Do You Live in Southern California?

If you live anywhere in Southern California, you cannot do a better thing for yourself than to drive to Ontario some day and look over the Armstrong Nurseries.

Up in Ontario on the east side of famous Euclid avenue, which connects with all of the boulevards, is the office and city sales yard. Illustrated in picture No. 6 below.

Down south of town there are more than 300 acres of fine soil, where everything possible is done to produce the best plant growth.

If you live too far away to visit the nurseries, please write in detail just what your plans and your problems are and let us make suggestions from our fund of experience.

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produce dependable trees.

ARMSTRONG TREES ARE SHIPPE

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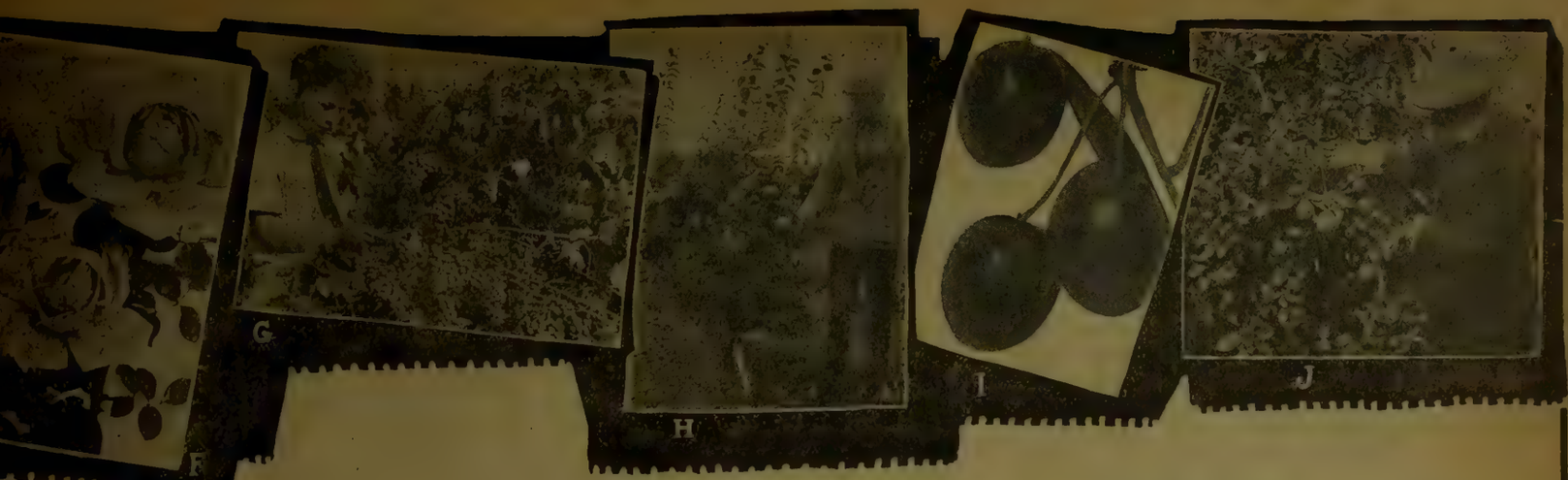

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Here's Why We Serve You So Well

(ILLUSTRATIONS BELOW)

1—ASSEMBLING ROOM. Trees and plants are here assembled. Roots and tops are carefully inspected by experienced men and passed to the packers.

2—PACKING DEPARTMENT. Note the boxes, bales and packages of Nursery goods being prepared for shipment. These men know how—they have been packing Armstrong trees for years.

3—AVOCADO SECTION. Our avocado expert has made a marked success in growing the young trees. Fruiting trees in many orchards is a proof of this fact.

4—OFFICE BUILDING. All equipment is modern and arranged to expedite the handling of correspondence and orders.

5—OFFICE INTERIOR. View in the order department where orders receive the prompt attention patrons appreciate. The office adjoins the packing department. When customers require it, orders are booked, passed to the packing department and shipped the same day. Promptness is a service you may expect.

6—SALES YARD. Under lath shade, adjoining office, on beautiful Euclid Avenue right in the center of Ontario. We display a fine stock of beautiful ornamentals, continuously replenished from our three-hundred-acre field nurseries.

7—BALLING ORNAMENTAL TREES. Many varieties of Arborvitaes, Cedars, Cypress, Junipers, Pines, Sequoias, Yews and other evergreens are taken up with a solid ball of earth, securely tied with burlap, thus insuring successful transplanting.

8—SHIPPING TRUCK. Loads of packages and bales are delivered to the Santa Fe, Southern Pacific, Salt Lake Railways and the American Railway Express Company.

Yes, There Is a Catalog for You

The Catalog this year is chuck full of fine pictures, most of them new, showing the leading varieties for home and orchard planting. Lots of valuable information and extensive cultural directions.

Just fill out the attached coupon and check on the list at the side the sort of plants that you are interested in. If you say how many of each and give other necessary information, we will make you a special quotation.

Now is the time to plant—write today.

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Quantity.

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.....Avocado
.....Tropical Fruits
.....Loquat
.....Apple
.....Apricot
.....Cherry
.....Peach
.....Pear
.....Prune
.....Plum
.....Nectarine
.....Fig
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There is no reason in the world why the farm tool kit should not be just as good as the carpenter's.

There is a big difference between a good saw and a poor one and there is a big difference in the sort of work they turn out.

The difference in saws doesn't show on the outside—it shows in the way they work.

If you buy your saw the same way the carpenter does, it will do the work as well as the carpenter's saw.

Buy it by name—Disston. That is all you need to know. Quality *does show on the outside* of a Disston Saw. It is stamped on the blade and it is spelled like this—"Disston." Look for it. It is your guarantee.

Send for our booklet, "Disston Saws and Tools for the Farm"

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When you install a pumping plant you want water—plenty of water—full rated production and more if possible. And that's what you get when you install

American Centrifugal Pumps

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WRITE FOR CATALOG

—which illustrates and describes the entire line of American Pumps and proves their advantages beyond a question. The American Catalog points the way to irrigation efficiency.

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Some Money-Saving Dairy Helps

"It's the Little Things That Count"

THE use of a number of dairy helps has made the work easier and more agreeable on Mission Rose Farm near Dayton, Oregon.

Hard milking cows have been treated and the difficulty overcome to a great extent by the use of a teat dilator. The dilator is a small nickel-plated instrument about an inch and a half or two inches long. From the rounded point it gradually enlarges for three-quarters of its length, merging into a flange. Behind the flange is a stem and button for grasping the instrument when in use.

The dilator is used by inserting it through the teat opening and working it up past the sphincter muscle into the milk duct. This forces an expansion of the muscle which allows the milk to flow out with less pressure from the hand. F. M. Roseman, manager of the farm, found it advantageous to roll the teat between his palms and to lubricate the dilator with carbolated vaseline, before using. This facilitated its insertion into the teat. By working the instrument into the teat past the flanged enlargement it was possible to keep it in place from one milking to the next. This treatment was continued until easier milking resulted.

Saving Cut Udders

Badly cut udders sometimes result when cows become entangled in barbed wire fences. On two different occasions when accidents of this sort occurred Mr. Roseman saved a quarter of the udder by the use of a milk tube.

In the first case one quarter was frightfully slashed. A long spiral cut nearly severed the teat from the udder and another gash laid the flesh open almost to the milk gland. In preparing the teat wound for healing the injured member was held in place by hand while a milk tube was inserted at the normal opening and worked up through the milk duct, thus connecting the cut portions.

A flange at the lower end, similar to that on the dilator, kept the tube in place and it was allowed to remain in the udder until the wound had healed. As a precautionary measure Mr. Roseman made several turns of the tube at each regular milking. This prevented the flesh from adhering to the instrument during the healing process.

The second case treated by Mr. Roseman was a short straight cut that opened the teat clear into the milk duct. Similar remedial measures were employed. Use of the milk tube on each of these cases permitted the lacteal secretions to drain out as fast as formed, thereby keeping the milk gland functioning properly. At the same time it allowed the opened duct to heal with a free passage which made it possible to draw milk after the healing process was completed.

A Comfortable Stool

A cushioned milk stool used on Mission Rose farm adds to the herdsman's comfort. The cushion is made simply by folding up an old grain sack to the same size as the milk stool seat and fastening it on with small nails or tacks. As soon as the cushion wears enough to feel uncomfortably hard it is removed and a new one tacked on.—E. D. R.

Feeding the Dairy Bull

Although the bull in the dairy herd is often looked upon as a necessary evil it should not be forgotten that the calves inherit half their blood from him. Too often the bull is housed in dark, dirty quarters and little attention given him. The bull at all times should have a proper feed, and the kind will depend somewhat upon his age. Young growing bulls do well when fed legume hay and 4 to 8 ounds of grain daily. A suitable mixture to be fed with clover or alfalfa hay is four parts of corn chop, one of oats, and one of bran.

Older bulls as a rule are not as active as young animals, and there is more danger of overfeeding them. After the animal is mature he requires only sufficient feed to keep him in good breeding condition and to keep him warm. The herd bull should not be allowed to become fat as this results in sluggishness and early loss of breeding power. See that he has an abundance of drinking water and ample opportunity for exercise.

While care should be exercised to avoid overfeeding, do not go to the other extreme in the case of young bulls, as underfeeding checks growth. Size is always a desirable quality, and it is poor economy to underfeed a growing sire. Feed him a sufficient amount of grain to furnish ample material for growth and regulate the quantity according to his appetite and condition.

It is said that dairying is a science. A science of common sense, experience and cleanliness.

Forcing the Pigs

A pig raiser makes more profit when his pigs learn to eat at an early age. It is customary to wean pigs when they are about six weeks old, as that is about as long a time as the sow can afford to suckle them if she is to produce two litters a year.

If the young pigs learn to eat before weaning they do not suffer a set-back at the loss of the mother's milk. There is no better way to teach young pigs to eat than to give them the run of a small pen where they can find appetizers such as apple and potato parings, sprouted grain, ground alfalfa and warm separator milk in a small, clean trough. Shorts or wheat bran as a self-feeder before the pigs will prevent the runts. The runty pigs spend more time at the feeder and less at the sow and make nearly as good gains as the pigs at the sow.

Four sheep panels fastened together in the pasture, or hog lot with one of the bottom boards removed will admit the six-weeks-old pigs but not the older ones. It is highly desirable that sows should have access to green forage crops as long as any such materials are available. The sow realizes immeasurable benefit from rustling about for the bulk of her food. The method insures to the female porker the exercise necessary to maintain her in the condition favoring good litters of pigs.

There has never been such a demand for sheep, whether feeders or breeders, as at the present time.

Calf Enemies

WHITE SCOURS BLACKLEG

Your Veterinarian can stamp them out with **Cutter's** Anti-Calf Scour Serum and **Cutter's Germ Free** Blackleg Filtrate and Aggressin, or **Cutter's** Blackleg Pills.

Ask him about them. If he hasn't our literature, write to us for information on these products.

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DON'T KILL YOUR CATTLE
BY DRENCHING
Salts and oil are DANGEROUS.
Few cattle die of constipation; many of PARALYSIS of the bowels. Give

LAXOTONIC
dry on the tongue. Positively prevents and overcomes both. Excellent for loss of appetite.
AT OUR DEALERS
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Send for price list of medicines. Consult DR. DAVID ROBERTS about all animal ailments. Information free. Get a FREE copy of "The Cattle Specialist" with full information on Abortion in Cows.
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ELDORADO COCOANUT OIL CAKE
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Top Dress with Nitrate

Plenty of Nitrate in Chile

The total amount of Nitrate of Soda in the vast Chilean Deposits is

720,000,000 Tons

At the present rate of the world's consumption, these deposits will supply Nitrate for

300 Years

Shipping conditions are rapidly improving. American farmers should learn the FACTS about the Nitrate Supply. Write for information.

Chilean Nitrate Committee
P. O. Box 248 Berkeley, Cal.

Cured His RUPTURE

I was badly ruptured while lifting a trunk several years ago. Doctors said my only hope of cure was an operation. Trusses did me no good. Finally I got hold of something that quickly and completely cured me. Years have passed and the rupture has never returned, although I am doing hard work as a carpenter. There was no operation, no lost time, no trouble. I have nothing to sell, but will give full information about how you may find a complete cure without operation, if you write to me. Eugene M. Pullen, Carpenter, 749B Marcellus avenue, Manasquan, N. J. Better cut out this notice and show it to any others who are ruptured. You may save a life or at least stop the misery of rupture and the worry and danger of an operation.

Horse Feeding Rack

ON a large hay ranch, where the men frequently take their lunch to the fields when working some distance from headquarters, the problem of caring for the work horses was solved by the construction of a portable feed rack, capable of accommodating 20 head, and designed to supply both hay and grain. The end view, shown in the accompanying photograph, gives a good idea of the construction of the feeder, which consists of a "V" shaped hay rack, equipped with a grain trough (A) at both ends and along the sides, at the bottom of the hay compartment. The contrivance is mounted upon an old set of grain-separator wheels, and is fitted with tongue and double-trees.

How It Is Used

In the morning the rack is filled with hay and a sack or two of grain is thrown on. One of the work teams is hitched to the load and it is drawn

A Feeding Rack
Which Accommodates 20 Work Animals in the Field

to the point where the noon rest is to be taken. At noon the grain is distributed in the trough. One team stands at each end, and four teams at each side. The teams on the sides are separated from each other by means of triangular partitions, which also serve as braces for the hay compartment. The animals take the hay from between the slats which form the rack.

Advantages cited for this feeder as compared to the old system of feeding grain in nose bags and hay on the ground or in wagon boxes, are many. The horses are tied with their heads up and consequently do not slip their collars or become tangled in the harness; there is no waste of hay and grain; all the horses are fed together with a minimum of effort; a secure hitching place is provided for each one, and the animals remain in better condition through being properly fed and cared for.

Beekeeping in National Forests

The possibilities of beekeeping in the national forests in Southern California are being investigated by apiculturists of the United States Department of Agriculture in co-operation with the forest service. Dr. E. F. Phillips and Mr. George S. Demuth are in Southern California investigating the subject, and while here will assist State authorities in conducting extension schools for commercial beekeepers at San Diego, Davis, Visalia and Riverside.

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That one fact alone is sufficient reason for your choice of a De Laval.

The creameryman handles millions of pounds of milk and he has found out from experience that no other cream separator will skim so clean or wear so long as the De Laval.

"Claims" don't fool the creameryman. He goes on "performance." Why not you too?

For catalog or any desired information see the local De Laval agent, or write to our nearest office.

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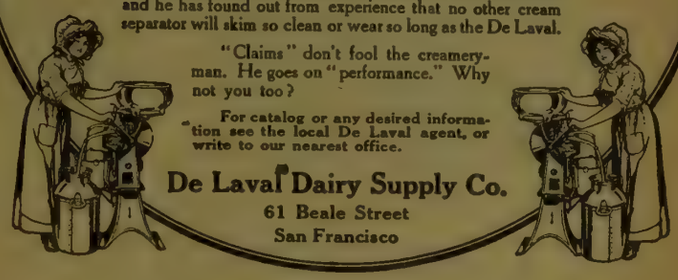

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A record for twenty-five consecutive months of 2,067 lbs. of butter.

HOLSTEIN
A yearly record of 30,230.2 lbs. milk and 1,111.56 lbs. butterfat.

They *Must* Be Healthy

The cows with the big production records are first of all healthy cows. Perfect health is more responsible for their scores than breeding or any other single factor.

It is a fact that more than 80% of the poor milkers in almost any dairy can show remarkable gains in milk production by the most simple home treatment and observation.

Such common and dreaded ailments as Abortion, Barrenness, Retained Afterbirth, Scouring, Lost Appetite, Bunches and such other complaints as arise from low vitality of the digestive and genital organs are readily eliminated by simple home treatment and judicious use of KOW-KURE. Almost all diseases can be reached by this wonderful medicine.

Send for our valuable free book, "The Home Cow Doctor." It gives directions for the use of Kow-Kure in each disease—also contains a wealth of general information valuable to any cow owner.

Buy KOW-KURE from feed dealers or druggists; 60c. and $1.20 packages.

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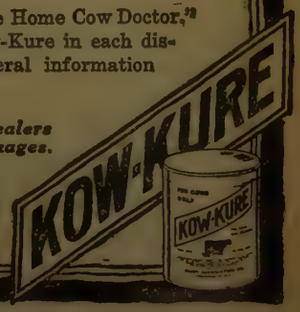
Lyndonville, Vermont



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From recent letters of ten farmers who have used Giant Powders for Stumping we make these extracts:

"1. Your Giant Farm Powders shoot the roots. 2. They have wide breaking power and less bad gases than others. 3. I get the same excellent results from them every time. 4. They are always uniform. 5. I used eleven tons and wouldn't have any other make. 6. I want to sell a lot of other powder that I have because Giant does the work much better. 7. Genuine Giant can't be equalled. 8. I don't have to use so much powder when I blast with Giant. 9. You know what we need for stumping. 10. I save money by using Giant Powders."

Write today for our free book, "Better Farming With Giant Farm Powders." It tells how to save money and get better results in stumping, ditching, tree-planting, etc.

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"Everything for Blasting"
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GIANT FARM POWDERS

STUMPING EUREKA

Grow Wheat in Western Canada

One Crop Often Pays for the Land

Western Canada offers the greatest advantages to home seekers. Large profits are assured. You can buy on easy payment terms,

Fertile Land at $15 to $30 per Acre—

land similar to that which through many years has averaged from 20 to 45 bushels of wheat to the acre. Hundreds of cases are on record where in Western Canada a single crop has paid the cost of land and production. The Governments of the Dominion and Provinces of Manitoba, Saskatchewan and Alberta want the farmer to prosper, and extend every possible encouragement and help to

Grain Growing and Stock Raising.

Though Western Canada offers land at such low figures, the high prices of grain, cattle, sheep and hogs will remain.

Loans for the purchase of stock may be had at low interest; there are good shipping facilities; best of markets; free schools; churches; splendid climate; low taxation (none on improvements).

For particulars as to location of lands for sale, maps, illustrated literature, reduced railway rates, etc., apply to Supt. of Immigration, Ottawa, Can., or

GILBERT ROACHE, 3-5 FIRST ST., San Francisco, Cal.
Canadian Government Agent.

WESTERN CANADA Farm Lands at Low Prices The Wheat Belt of America

The Farmers' Friend

(Continued from Page 3)

ALTHOUGH its head is in Washington, the hands of the United States Department of Agriculture reach into every part of rural America. Distance is no barrier to the extension of its work and the Pacific Coast, no less than the East, the North and the South, shares the benefits of its unceasing activity. Although these manifold benefits can never be measured in terms of money, there are hundreds of examples of direct financial gain. For instance, a letter is at hand from a farmer at Modesto, California, containing this very definite testimony: "My neighbor, who bought a fruit ranch near me, told me that the county agent saved him just $600 on his crop of Thompson seedless grapes by showing him how properly to prune his vines." One man on one item—$600.

put out a much more highly standardized product.

Cactus Investigations

The Department of Agriculture has brought together perhaps the most complete collection of cactus genera and species ever assembled, at its plant gardens at Chico. The object is the comprehensive study of the plants as a foundation for investigations along economic lines. Bulb investigations are carried forward at Chico and Eureka, California, and Bellingham, Washington. Several species have been developed which have given much better results than the usual imported stocks of the same species.

Aids Avocado Growers

The Department of Agriculture believes that the avocado industry, a comparatively new one in California, has been advanced perhaps from ten to twenty years over what would have been the case had the usual course in such development been followed, without scientific experimentation done at the Department experiment stations.

Important Citrus Study

For the past six or eight years the office of Horticultural and Pomological Investigations has conducted citrus fruit improvement work in California. It was noted in the study of the groves that many trees were habitually barren or nearly so, that others produced an inferior grade of fruit and that, on the average, the good commercial product of an entire planting was produced on a relatively small proportion of the trees. The Department's investigations have established the fact that the quality of barrenness or productiveness is inherent in the tree and is perpetuated when buds are selected for propagation. The practical application of these results has been the budding over of many thousands of non-productive or otherwise undesirable trees in many commercial groves. The work has been carried far enough to convince the growers that this practice will result in a very much larger yield of a higher grade fruit.

Fruit Surveys

A representative of the office of Horticultural and Pomological Investigations has headquarters at Sacramento for the purpose of making a survey of the fruit growing interests in California, Oregon and Washington. He is ascertaining fruit production problems and studying conditions generally for the purpose of outlining in a constructive way such experiments as will give information along the lines that are most urgently in need of enlightenment.

Marketing Problems

Perhaps the most far-reaching and, to the orchardists, the most important lines of investigation carried on in the Pacific Coast States are included under the head of fruit handling, storing and transportation. This work was begun in 1904 with a general survey of the citrus industry undertaken with a view to determining methods of preventing serious loss from decay while fruit was in transit from the point of production to the Eastern market. The loss had become so serious that the future success of the industry was imperiled.

Through a long series of experiments and investigations in the groves and in the packing houses, together with a very thorough study of commercial methods of handling the

Clarence Ousley
Assistant Secretary of Agriculture with headquarters at Washington, D. C.

fruits, it was determined that the initial source of the difficulty was very largely in the injury of individual fruits, caused by the usual methods of handling the fruits while being picked and in the packing house. The result was a revolution in the methods of handling the fruit in the harvesting process and, what was of even greater importance, a complete remodeling of practically all the washing, sizing, conveying, and other types of machinery which were used in most of the citrus packing houses in California. This work reduced the loss from a degree which was practically ruinous to a degree which is almost negligible.

A similar line of investigation was later taken up with grapes with similar results. Improved methods have also been worked out and applied for handling, storing and shipping apples, peaches, prunes, cherries, pears, raspberries and practically all the fruits grown on the Pacific Coast.

Controlling Fruit Disease

For the past twelve years the office of Fruit Disease Investigations of the Bureau of Plant Industry has carried on an extensive eradication campaign in California, Oregon and Washington against pear blight, apple powdery mildew, the little leaf of peaches and apricots, brown rot of prunes and cherries and various other fruit diseases. In this time important discoveries and great progress have been

(Continued on Page 31)

Got 117 Eggs Instead of 3

Says One of Our Readers

Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs" and you will be amazed and delighted with results. A dollar's worth of "More Eggs" will double this year's production of eggs, so if you wish to try this great profit maker, write E. J. Reefer, poultry expert, 3749 Reefer Bldg., Kansas City, Mo., for a $1.00 package of "More Eggs" Tonic, or send $2.25 today and get 3 regular $1.00 packages on speciall fall discount for a season's supply. So confident is Mr. Reefer of the results that a million dollar bank guarantees if you are not absolutely satisfied, your dollar will be returned on request and the "More Eggs" costs you nothing. Send a dollar today or ask Mr. Reefer for his free poultry book that tells the experience of a man who has made a fortune out of poultry.

One of our subscribers says: "More Eggs increased my supply from 3 to 117 eggs."

Poultry Raisers Write from all Parts of U. S. Wonderful Results of More Eggs.

Five Times as Many Eggs Since Using "More Eggs" Tonic.

Since using "More Eggs," do not think there is one chicken that is not laying. We get from 40 to 50 eggs per day. Before using "More Eggs" we were getting 8 and 9 eggs per day.

A. P. WOODARD, St. Cloud, Fla.

"More Eggs" Paid the Pastor.

I can't express in words how much I have been benefited by "More Eggs." I've paid my debts, clothed the children in new dresses, and that is not all—I paid my pastor his dues. I sold 42½ dozen eggs last week, set 4 dozens, ate some and had 1½ dozen left. MRS. LENA McBROON, Woodbury, Tenn.

"More Than Doubled in Eggs."

I am very much pleased with your "More Eggs" Tonic. My hens have more than doubled up in their eggs.

L. D. NICHOLS, Mendon, Ill.

126 Eggs in 5 Days.

I wouldn't try to raise chickens without "More Eggs," which means more money. I use it right along. I have 33 hens and in 5 days have gotten 10½ dozen eggs or 126.

MRS. J. O. OAKES, Salina, Okla.

Never Saw Anything Like the "More Eggs" Tonic.

I gave the "More Eggs" Tablets to my hens and in three weeks they began laying and laid all winter. I never saw anything like them in the world.

MRS. ALBERT SMITH, Penn R. R. Ore Docks, Lackawana, N. Y.

75 Per Cent Laid Every Day.

The "More Eggs" I ordered from you last winter proved out very satisfactory. Fully 75 per cent of my hens laid every day.

H. C. RADER, Greenville, Tenn.

Delighted With "More Eggs" Tonic.

I am delighted with the "More Eggs" Tonic remedy. I did not get any eggs this winter until I got the "More Eggs."

MRS. J. E. TILLSON, Mize, Miss.

Better Than We Say.

I have used your remedies for two years and they are even better than you recommend.

JENNIE M. JAMES, Unionville, N. C.

Never Laid as They Do Now.

I am very much satisfied with the "More Eggs" Tonic. My chickens never laid as many eggs as they do now.

W. A. GRUETEMACHER, Great Bend, N. D.

Well Pleased With "More Eggs."

I received my "More Eggs" Tonic about the 8th of January and am so well pleased with it I am mailing you $1.00 for another box. I have about 150 hens and get anywhere from 80 to 100 eggs daily, and one day over 100.

MISS VERA BOWMAN, Rochelle, Va.

WRITE TODAY

You want to know about this wonderful egg producer. Don't delay, but write today to E. J. Reefer, the poultry expert, 3741 Reefer Bldg., Kansas City, Mo. Send $1.00 now for a season's supply of "More Eggs." Or send for Mr. Reefer's free poultry book. It tells the methods of a man who has made a fortune out of poultry. Don't put this off.

Poultry Lore

By M. B. Ferry

DURING several years of travel and observation, together with a great deal of practical experience in the poultry business, I have found that nearly every poultry fancier in every climate has some good ideas about raising chickens that can be applied anywhere. Ideas in themselves are of no value unless applied and then if they bring results we should pass them on to the other fellow and let him profit by the experience.

After all, there are just three principles in the art of successful chicken raising. These are defined by a poultry expert as Breed, Sanitation and Feeding. I have found by bitter experience that we should not try, say, Leghorns, because Brown made his Leghorns pay, but rather we must find the breed with which we can do the most, and then stick to it. If you do your own hatching, do not inbreed, but infuse new blood every season. However, it is much more profitable these days to buy the baby chicks. After the breeding season, it is best to dispose of the cocks, for aside from their consumption of food, they are a detriment both to the production and preservation of eggs.

Building Pointers

The building of the coops should be carefully planned in order that there may be no crevices in which vermin will breed. Cement floors are easily cleaned and highly recommended by all successful poultrymen. One often hears the complaint that cement floors retain dampness during the wet season. This conditon, if really encountered, is easily overcome by spreading chaff. Dried bean pods or leaves are excellent when procurable. This litter serves as a scratching bed, and stimulates activity if the grain is thrown into it.

The roosting space allowed should be six to eight inches for the small breeds, eight to ten inches for the medium, and ten to twelve for the large chickens. The roosts and interior should be whitewashed frequently. Twice weekly during the summer the houses should be sprayed with a solution of kerosene, creosote (a small amount), and soap suds, except in July (breeding month for vermin), when it is advisable to disinfect every other day. Once or twice a month is sufficient during the winter months. For this purpose an old-fashioned hand fruit tree sprayer may be utilized. They are inexpensive and easily handled, and are excellent substitutes for the costly installed sprayers.

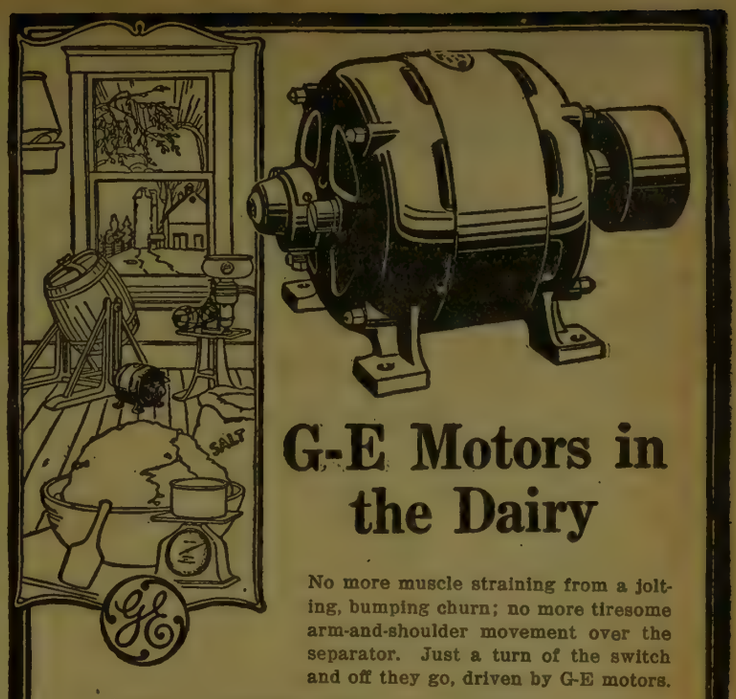
Substitute Feeds

The final and most important consideration is the feeding of the flock. The real problem is to provide the balanced ration containing all essentials. What is a balanced ration? A balanced ration must contain certain amounts of carbohydrates and protein. In California we are able to pursue different methods than in other States, due to the varieties of grain grown.

War conditions have made it necessary to find substitute feeds which will supply the carbohydrates and protein necessary for the production of eggs.

Alfalfa is a proteid and as such is of great value in connection with grain. Kaffir corn and feterita, being rich in carbohydrates, are good sub-

(Continued on Page 30)



G-E Motors in the Dairy

No more muscle straining from a jolting, bumping churn; no more tiresome arm-and-shoulder movement over the separator. Just a turn of the switch and off they go, driven by G-E motors.

There is a G-E Farm Motor suited in size, speed and control to every farm or dairy operation. A man at your lighting company who is experienced in such power problems will help you on yours—or write to our nearest office.

General Electric Company

General Office: Schenectady, N. Y.

Los Angeles Office: Corporation Bldg. — San Francisco Office: Rialto Bldg.

45-32

For a Fruitful Crop—

See that your dormant spraying is done properly. Remember—it takes a long time to grow your crop. A little care now will mean better fruit and bigger profits. Right now you need a general clean-up spray that will not only kill the insects but will tone up your trees. In other words, you need—

Crude Oil Emulsion

No matter what Universal Spray you order you can be sure that it is dependable—uniform in quality—and made under the direction of trained laboratory and field men.

Here are some of the other sprays manufactured or distributed by us: Dormant Soluble Oil; Lime Sulphur Solution; Bordeaux Mixture; Arsenate of Lead; "Triumph" for Citrus Trees; Miscible Oil No. 1 for Olives; Miscible Oil No. 2 for Thrips.

Don't hesitate to write our Service Department—in charge of Paul R. Jones, Entomologist—for expert advice. This service costs you nothing.

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"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.

"The Bean Is the Best"

Clean Trees Bring in the Money

Mossy, scaly trees have no vitality. The moss and scale sap the very life from the trees—the crops are small—and the fruit inferior.

But trees that are clean—and healthy—produce BIG! It costs less to spray than to suffer the loss that results from not spraying.

Do the Work Right!

You must have a sprayer that will drive the material onto the trees under heavy pressure, so that the job is thoroughly done.

You must have a sprayer, too, that will work right along day in and day out without trouble. That's why you should get a Bean.

BEAN Power Sprayers

Check the coupon. Write your name and address clearly, and send for our new catalog of Hand and Power Sprayers.

BEAN SPRAY PUMP CO.
261 W. Julian St.,
SAN JOSE, CAL.

THE BEAN SPRAY GUN makes the largest power sprayer a handy one-man outfit. Ask us about it.

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BEAN SPRAY PUMP CO.
Address Office Nearest You.
Please send me your sprayer book with full information about Bean Sprayers.
Los Angeles, Cal.
I have ..... acres of ..... Power Sprayers ..... and am interested in ..... Accessories.
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Name .....
Address .....

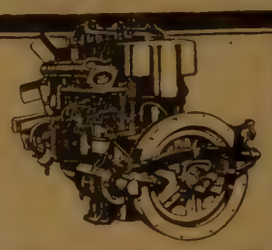
Experts Say
"ZEROLENE IS BETTER"

—because it holds better compression, gives better protection to the moving parts and deposits less carbon.

Zerolene is the correct oil for *all types* of automobile engines—the correct oil for your automobile.

Get our Lubrication Chart showing the correct consistency for your car.

STANDARD OIL COMPANY
(California)



The "T"-Head type engine, illustrated here, like all *internal combustion engines*, requires an oil that holds its lubricating qualities at cylinder heat, burns clean in the cylinders and goes out with exhaust. Zerolene fills these requirements perfectly, *because it is correctly refined from selected California asphalt-base crude.*

ZEROLENE

The Standard Oil for Motor Cars

Plant Loganberries Now

January is the time to set out cuttings of this delicious Pacific Coast fruit. The U. S. Department of Agriculture has recently published a very complete treatise on the Logan blackberry. It is free. Write the Division of Publications, U. S. D. A., Washington, D. C, and ask for Farmers' Bulletin 998.

THE Logan blackberry, or Loganberry, formerly thought to be a hybrid between a blackberry and a red raspberry, is now considered a variety of the Pacific Coast species of trailing blackberry.

Because of the different uses to which the Logan blackberry is adapted, its culture has rapidly assumed importance in California, Oregon and Washington. Large quantities are marketed in the fresh state and they are used extensively in the production of a non-alcoholic beverage, in making jams and jellies, and in the canning industry.

Climatic Adaptation

The Logan blackberry is adapted to the milder parts of California, Oregon and Washington, where the temperature does not reach zero. While the plant may survive in some sections of the South, it does not fruit well, and it is not hardy in the northern States. The fruit resembles a large blackberry in shape, but has the color of the red raspberry. Logan blackberries and related varieties thrive on any deep, fertile, well-drained soil, but the crops will be largest on the richest soils. As with other berries and garden crops, it will pay well to have the soil in good condition before the plants are set. In Oregon and Washington plants should be set in early spring not later than the middle of April while farther south in California they should be set as soon as the young plants have grown enough to transplant, usually in January. Plants which have formed during the autumn and winter at the end of the year-old canes are generally used to start a new plantation.

Owing to the trailing habits of the Logan blackberry, it is necessary that trellises be made to support the canes. Posts are usually set about 30 feet apart in the rows along which two or three wires are strung, the top wire being from 4½ to 5 feet from the ground. The canes usually grow from 15 to 20 feet, although they may reach 30 feet in length in a single season. Trellising should be done in the autumn of the first year or in the early spring of the following year. Two systems—the weaving and the rope—are in common use. In the weaving system each cane is woven separately on the wires and thus the largest possible fruiting surface is exposed to the sunlight. When the rope system is adopted all the canes are wrapped about the trellis wires in bundle fashion. Immediately after the harvesting season, when the plantation is in its second year, the canes that have fruited should be cut out and the new canes trained to the trellis. With this exception very little pruning is necessary.

The Harvest

The Logan blackberry begins to ripen a little later than the first raspberries and usually continues for about six weeks. When destined for the fresh fruit market the berries must be picked several days earlier than when they are to be canned, evaporated, or used for jellies and preserves, or for the extraction of the juice. When efficient methods are used the berries may be shipped long distances. If the berries are to be evaporated they should not be picked until very ripe. If they are to be canned they should be picked while still firm, but after they are thoroughly ripe. If, however, they are intended for unfermented juice purposes, they should be allowed to ripen on the canes more than is ordinarily allowed when they are intended for the evaporator or the cannery. Between one and two tons of fruit per acre can be expected from one-year-old plantations, but when plants are well established yields should range from 4 to 5 tons per acre Some plantations in Oregon have been known to remain nearly 20 years and still continue to bear excellent crops, but in California they do not usually continue to be profitable longer than six or seven years.

Grow Large Fruit

The fruit warehouses of the northwest are overloaded with small apples, which there is great difficulty in marketing, although good sized apples are in strong demand at attractive prices. A great deal is said about small sizes being preferred for the export trade, but 125s and larger invariably bring higher prices than the smaller sizes. The dryness of the past season is partly responsible for the surplus of small apples, but authorities agree that proper thinning, pruning, cultivation and irrigation would have made most of the crop fair to large in size. Neglect of these important operations, or doing them in a half-hearted way, invariably results in a surplus of small, unsalable apples. Dealers who sell to travelers at the railway stations pay a premium for large fruit, preferring apples 104 and larger and peaches 48 and larger. Most travelers, they say, willingly pay from three to five cents each for large fruits in preference to smaller sizes at much lower prices.—O. H. B., Ashland, Oregon.

Tons of Dates for Sailors

Tons of dates, the crop grown by the United States Department of Agriculture in the date-testing gardens at Indio and Mecca, Cal., will be supplied to the Navy Department for the use of crews on board destroyers. In supplying these dates to the Navy Department the specialists of the Department of Agriculture will obtain valuable data on the keeping qualities of the varieties being tested, as well as on the effect of the different maturation processes and methods of packing used in preparing the dates for shipment—information that will be valuable to the rapidly developing date industry in the Southwest. The dates, a confection rich in sugar, the department specialists say, are of great value as a concentrated food.

Let my soul walk softly in me
Like a Saint in Heav'n unshod,
For to be alone with Nature
Is to be alone with God.

Barley in Bulk or Bags?

(Continued from Page 4)

additional expense of sewing and tying the damaged bags, not to mention the loss of the bags, which are now so expensive.

One Sure Method.

Authorities, both in this country and in England, agree that the only way to eliminate the rat is to separate him from his source of food supply; poisoning and trapping are ineffective unless this is done. For, while such measures bring temporary relief, they only serve to increase the available food supply for the remaining pests. These breed several times a year, and the birth rate partially offsets the results of poisoning and trapping.

Changes in methods of storing grain have resulted in a marked reduction in damage by rats. Structural changes to make grain elevators vermin proof have been made with good results. Rat proof metal grain bins also have demonstrated their value in Eastern, Middle Western and Pacific Northwestern States, and in a few instances have been used with marked success on California ranches during the last season.

These grain storage bins, made of rust-resisting, galvanized sheets of iron, shaped and punched to fit, are easily and quickly erected by unskilled labor, and in addition to preventing damage by rats, eliminate the cost of bags, a great deal of labor and the usual losses from field-rodents, exposure, leakage and theft.

By employing simple arrangements at the harvester, grain-tight wagon boxes, portable steel elevators and one or more metal grain storage bins, the average wheat farmer of California can become immediately independent of excessive labor costs and high insurance rates, and can stop at once losses due to rats, fire, exposure, theft and leakage.

Freight cars can easily be made grain tight, and when equipped with "grain boards" for the doors, as they are in the Middle West and East, furnish a safe and less expensive method of shipping. The portable, tubular steel elevator is readily available for loading the freight car from the wagon dump, into which the grain is delivered by the farmer from his metal grain-storage bin on the farm, or is easily transferred by the same method from metal grain bins on railroad sidings. In addition to reducing loss of grain this method has been found to effect a saving in time and labor amounting to $1.50 per ton.

The metal bins are now made in capacities of from 600 to 5500 bushels. The costs of labor and sacks saved the first year of use have in several cases been sufficient to pay the cost of the bins and elevating machinery. This provides the equipment cost-free the second season, at which time the saving effected by bulk-handling becomes a real source of income.

Melilotus in the North

In reply to a subscriber who inquired relative to the use of Melilotus indica in the northern part of California Mr. Robert Hodgson, who wrote the article "Feeding Crop with Crop" in our October issue, has this to say:

"I know of no reason why Melilotus indica should not prove a very satisfactory winter cover crop for your locality. It has not, however, been tried very extensively in the northern part of the State. One reason is that there is a natural cover crop of burr clover upon a very considerable part of the Sacramento valley and the coast counties. This burr clover matures slightly earlier than Melilotus indica, and thus reseeds itself. You can obtain seed of Melilotus indica, as well as burr clover, from the seed dealers. The price of the Melilotus will be about twelve cents. Where you have small trees, 25 to 30 pounds per acre is the best amount of seed to sow.

With regard to the improvement of your hay land, I would suggest planting a portion of it to beans or alfalfa, or some other legume crop for a season, following such crop by hay. A marked increase is usually observed following a legume crop. It would hardly be possible to follow a winter cover crop with hay, as, for best results, a hay crop should be planted in the fall or winter.

"If your soil is extremely gravelly, you may experience trouble in obtaining a stand with either Melilotus or burr clover, in which case I would suggest rye as the best winter cover crop. Rye may be planted dry and after the spring rains will make a rapid growth. Of course, it is by no means as valuable to the soil as either burr clover or Melilotus."

Uniform products command the best prices. Purebred fowls produce uniform products.

Lime Ban Lifted

The United States Department of Agriculture calls the attention of farmers to the fact that they are now free to buy all the lime needed for fertilizing their soil, unless the State director of extension or other State agricultural official finds it necessary to exercise control of purchases. The new conditions result from modification by the War Industries Board of its Circular No. 9, which covered the use of lime for agricultural purposes, which required farmers to apply for permits when they wished to buy more than one ton of agricultural lime in a year.

Eradicate Arizona Thistle

Another vicious weed pest, known as the "Arizona thistle," is claiming attention in parts of California. The thistle produces a burr, said to be so sharp as to puncture a bicycle tire. Should such a weed invade the alfalfa fields, the hay could not be fed to stock.

The safest way to destroy weeds that are pulled or dug out is to wilt them in the sun, pile them up with some inflammable material, or pour coal oil on the pile, and burn them. Many weeds pulled up and cast aside carelessly, again take root and grow with renewed vigor to produce a full crop of seeds.

Marketing Eggs

Market white-shelled and brown-shelled eggs in separate packages.

When selling eggs to the country merchant or cash buyer insist that the transaction be on the quality basis.

Ship or deliver eggs at least twice or three times weekly.

Small or dirty eggs should be used at home.

When taking eggs to market they should be protected from the sun's rays.

Infertile eggs will withstand marketing conditions much better than fertile eggs.

THE FRESNO NURSERY CO. INC.
TRADE MARK
RELIABILITY QUALITY SERVICE
FROM THE ROOTS UP

Why Our Trees Grow and Bear Fruit

—Climatic conditions are right.
—Soil suitable for growing young trees.
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—Trees dug by improved methods which preserve good root system.
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Our Pedigreed Trees Give Best Results
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Apricots
Pears
Cherries
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Nectarines
Peaches
Plums
Prunes
Almonds
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Pecans
Olives
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Lemons
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Avocados
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Grapes
Loquats
Guavas

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FREE ON REQUEST

The Fresno Nursery Co.
P. O. Box 615-F
Fresno, Cal.

YOU CAN MAKE A HANDSOME INCOME BY TRAPPING

Raw furs are extremely high now and the demand was never greater. Just think, even Skunks have sold this fall for over $9.75 each, and we know trappers who caught 19 Skunks in one night.

Wonderful Chance for Boys and Middle-Aged Men

There's a splendid chance for you to make money by trapping; it's pleasant work. Don't worry if you've had no previous experience. Our beautiful 36-page book, "Trapping for Profit," tells all about trapping and handling of furs, so that even the beginner can have wonderful success trapping and get the highest market price for his catch.

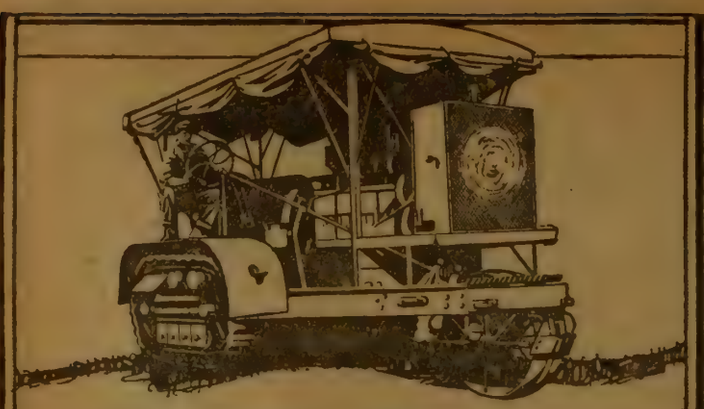
The book and price list are yours for a postcard. They're absolutely free.

E. R. SKINNER & CO.
1121 Front Street. Dept. C. Sacramento, Calif.

The powdered mica in Mica Axle Grease keeps the spindles smooth, resists wear and pressure, and makes the grease last twice as long. Mica Axle Grease would still be good axle grease without the mica. But the mica makes it better. Get a can from your dealer today.

STANDARD OIL COMPANY
(California)

MICA
AXLE GREASE



Power at the Drawbar is What Counts

The tractor you purchase should have a powerful motor—but that isn't all. The power of the motor should be delivered in actual pull without undue losses. The high percentage of its motor power delivered at the drawbar is an important point of "Caterpillar" Tractor supremacy.

The "Caterpillar" Tractor has a remarkably simple and direct transmission. It has no complicated, power-robbing differential. Its simple, long-lived track positively eliminates power losses due to ground-slippage. Those items mean superiority in design, and it is because of superiority in design that the "Caterpillar" Tractor invariably stands foremost not only in public and private competitions of every description, but also in the continuous test of severe every-day work.

The "Caterpillar" Tractor's position in the lead was not the achievement of a moment but the result of more than three decades of manufacturing experience — experience coupled with the highest standards, rigidly maintained, of workmanship and materials.

These points in construction and materials are explained in "Caterpillar" Tractor catalog No. 392, which also tells many other things you will want to know if you are interested in tractors. It will be sent on request.

THE HOLT MANUFACTURING CO.

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A New Home Cure That Anyone Can Use Without Discomfort or Loss of Time.

We have a New Method that cures Asthma and we want you to try it at our expense. No matter whether your case is of long standing or recent development, whether it is present as occasional or chronic Asthma, you should send for a free trial of our method. No matter in what climate you live, no matter what your age or occupation, if you are troubled with asthma, our method should relieve you promptly.

We especially want to send it to those apparently hopeless cases, where all forms of inhalers, douches, opium preparations, fumes, "patent smokes," etc., have failed. We want to show everyone at our own expense that this new method is designed to end all difficult breathing, all wheezing and all those terrible paroxysms at once and for all time.

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For Progressive Farmers

Throughout the text of this great book, the reader is given the results of scientific research, coupled with successful experience, by use of only such expressions as can be readily understood by those who have not had a scientific training. Thus any farmer with ambition to make the most of his labor and realize the greatest returns for his investment will find in this volume a priceless guide for everyday reference.

One Practical Idea Taken From This Book Worth Many Times the Cost of Entire Volume

It is needless to say that the advantages to be gained from a single practical idea, taken from any of these departments and put into practice, is worth many times the small expense incurred adopting the more approved methods.

This volume consists of over 500 pages handsomely bound in cloth, size 8½ inches long, 6½ inches wide, richly illustrated on good book paper. 200 fine drawings and half tones with feeding chart in colors.

The book will be mailed postpaid, including three years' subscription (new or renewal) to Orchard and Farm, for $1.50. If after receiving Practical Farming you find it is not just as advertised, and you are not thoroughly convinced it is a wonderful bargain, return it at our expense and we will cheerfully refund your money.

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Seed Potatoes

We specialize in selected SEED POTATOES; Certified White Rose, American Wonders, British Queens, Burbanks, Garnet Chilis and other varieties. Also fancy, recleaned Alfalfa Seed. Write for prices.

WM. A. CURTIS CO.

San Francisco, Cal.

Information About Bees

Without discounting in the least the value of practical experience, Orchard and Farm recognizes the necessity, in this day and age, of study in connection with any branch of agriculture. In this valuable article, Mr. Stuart names some of the leading books and magazines dealing with apiculture. By following his suggestions, the honey-producer may build up a valuable reference library, by means of which he can post himself upon both past and present discoveries, and glean from the experiences of others the knowledge with which to meet his own problems.

By C. D. Stuart

IT IS hardly necessary to emphasize the value of bee literature to commercial apiarists. Any business investment presupposes a profitable employment of capital, and the swift developments of industrialism require that business men shall sit up nights and "read up on" what the other fellow is accomplishing.

The novice in bee-culture is not, perhaps, so ruthlessly driven by competition, yet he ought equally to avail himself of every aid in securing results, and the reading of bee literature, made up largely of accounts of personal experiences, stands second only to one's own experience, in bringing about economy of time and energy.

Among books I have found helpful the most potential is "Langstroth on the Honey Bee;" L. L. Langstroth; Revised by Charles Dadant; published by Dadant & Sons, Hamilton, Ill., $2.00.

Langstroth, a retired clergyman, was a master beekeeper. The hive and the movable frame for holding honey-combs, invented by him seventy years ago, continue to be the standards not only for American apiarists, but for beekeepers everywhere. To claim that Langstroth wrote the last word on commercial honey-bees would be extravagant; but to state that little of original matter about the elements of commercial apiculture has been added by subsequent writers is a deserved tribute to the greatest of all commercial beekeepers. His greatness lies in the vision that enabled him to adapt to industrial uses the vast knowledge already existing about honey-bees. His movable-frame hive revolutionized honey-production.

Crude Practices

Before the advent of the movable frame it was the custom of honey-growers when harvesting a crop, to sulphur all colonies that had stored any quantity. In this manner the best bees were exterminated, while the poorest were left to increase, thereby reversing the law of heredity as applied by breeders of domestic animals. No wonder that the business of honey production made small progress during the five or six thousand years that honey-bees were kept by man!

The history of beekeeping shows no more patient or intelligent student than Langstroth. He took to the craft to regain his health and its mastery became his passion. The student will find Langstroth's book a sufficient text for all apiary subjects, excepting bee diseases, which he knew little or nothing about; no other publication contains such a wealth of practical information. The revision of Langstroth by Dadant brings his honey-growing down to date. Dadant was also a master apiarist, with so much of Langstroth's passion for the craft, that he has produced a sympathetic continuation of Langstroth's text.

Other Leading Works

Another book by a master is Doolittle's "Scientific Queen-Rearing," George W. York, Boise, Idaho; $1.00. Doolittle is not such a master of literary style as Langstroth. His book is verbose and disconnected, but it proves with patient study to be a clever epitome of the reproductive habits of honey-bees. While there were earlier professional queen-rearers, Doolittle was the first to adapt their knowledge to commercial methods. The beginner cannot afford to neglect this book, because he will find difficulty in succeeding commercially without expert knowledge of queen-rearing. In addition to being most adept at queen-breeding, Doolittle was an expert honey-grower. He possessed much of Langstroth's Yankee ingenuity, his passion for study, and his devotion to the calling.

A less prominent writer is E. W. Alexander, another master apiarist of the past generation. He is known chiefly through the devotion of H. H. Root, who, under the title, "Alexander's Writings on Practical Bee Culture," has edited such contributions of Alexander to apicultural magazines, as were thought to be of most interest. This book is published by A. I. Root & Co., Medina, Ohio; 50 cents. Through the lack of an original compilation the fraternity has lost such an index of Alexander's character as is afforded by the editions of Langstroth and of Doolittle; yet the fragmentary volume edited by Root is not to be neglected by commercial beekeepers.

As far as our own experience goes, Alexander has written almost the last word on working commercial apiaries. He was a rare example of the honey-grower who could keep seven hundred colonies on a single site in the buckwheat regions of New York, and could produce from this seemingly crowded yard not less than one hundred pounds to the colony each season. The commercial apiarist will find this little book a constant surprise by the information buried in a not very clear style of exposition.

Later Authorities

"Wax Craft," by T. W. Cowan; Sampson Law, Marston & Co., London; $1.00, is compiled by the editor of the British Bee Journal, the most prolific publisher among English-speaking beekeepers. The book is essential to commercial apiarists, and while it does not contain much original matter, it is a valuable compendium of what is known, up to the present, about beeswax.

"The A, B, C and X, Y, Z of Beekeeping," A. I. & E. R. Root; A. I. Root & Co.; $2.50, is a literary monument. It is an encyclopedia of apicultural information, and answers in convenient arrangement more questions than any one man could ever think up. Its popularity is attested in the number of copies owned by beekeepers.

Many recent writers have performed a gracious task in keeping the craft informed of the swiftly-changing current of commercial apiculture. Dr. C. C. Miller's "Fifty Years Among the Bees," A. I. Root & Co., $1.00; Frank Pellett's "Productive Beekeeping," Lippincott, $1.50; Dr. E. F. Phillips' "Beekeeping," Macmillan, $2.50; Anna W. Comstock's "How to Keep Bees," Doubleday, Page & Co., $1.00; W. Z. Hutchinson's "Advanced Bee Culture," A. I. Root & Co., $1.00, are among the best representations of the modern school.

Bee Magazines

Next in importance to the text books come the bee magazines. For California beekeepers, the Western Honey Bee, $1.00 a year, the official organ of the California State Beekeepers' Association, is invaluable. It is edited by John Duncan Bixby, Co-

(Continued on Page 30)

Sunflowers

The Foolish Farm Adviser

(Solomon Smith offers friendly advice to all who seek his counsel)

"My beans are full of weevils,"
Complained old Farmer Rood,
"I've sprayed and fumigated
"But it don't do any good.
"Now maybe you can tell me
"Some method, new or tried,
"To be rid of the varmints—
Or get beneath their hide."

"Just take some lime and water,"
Wise Solomon replied.
"Mix 'em well together
"And paint the whole inside
"Of your beanery, and then
"The bugs will hold their breath,
"And when the mortar hardens—
They'll be mortar-fied to death."

Then came Miss Daisy Spanker,
Who has an orange grove.
She had a hundred problems:
Said they nearly drove
Her crazy; trees were dying—
Crop looked mighty slim.
Would he not assist her?
She put it up to him.

"My cure for all your troubles,"
The Farm Adviser said,
"Is one that's very simple.
"I keep it in my head.
"Just dig your trees out by the roots
"And sell them off for fuel.
"Then move back to the city
"And return to teaching school."
—Justin Nutt

Spoke From Experience

"Ef yer goin' to tie a brick on th' cow's tail in fly-time," remarked Uncle Wiseacre, rubbing a large bump on his head, "be sure t' use a heavy one thet she kaint swing!"

A Horse Laugh

(News item: It has been learned that horses can contract the Spanish influenza.)

Old Dobbin: "Why is Prince making such a fuss over there at the end manger?"

Young Dobbin: "Well, you see, he has the "Flu," and every time he starts to eat, he sneezes and blows the oats all out of his box."

When daughter decides that she will "stay home from school this year and help mother," you may as well plan to add the cost of a wedding to your budget of household expenses!

Human Nature

A man bought a Ford. He equipped it with shock absorbers, gas savers, demountable rims, self-starter, the kind of lights that one can see by at night, tire carrier, tool box, lock, fancy top, plate glass curtains, patent cooling device, tire pump, one-piece floor board, large steering wheel, oiling system, a new hood, speedometer and clock.

Another man bought a Ford. He took everything off but the engine, transmission, steering gear and wheels, and put on a soap box for a seat.

They are both happy!

Little coughs and sneezes
A feeling strange and new
Some playful winter breezes—
Another case of "Flu."

Bulk Handling Costs Less

There were 16 tons of grain lost in a recent shipment of 2,500 tons of sacked grain from Vallejo to Stockton.

Mould, rats, gophers—leaking sacks—were the direct causes of that enormous loss.

The California milling concern that made the shipment handled its next shipment of 2,500 tons of grain over the same route—in bulk.

Out of 2,500 tons—only one-half of one ton of grain was lost. A saving of fifteen and a half tons! With grain at $2.20 a hundred that saving was considerable. In addition the entire cost of the sacks was saved.

Save the entire cost of Sacks.

By using sacks your crops are at the mercy of rats, gophers, bad sacks, thieves and rain. You pay for extra help during threshing time.

It is needless. Calco Metal Grain Bins eliminate extra labor and make your grain vermin, fire and weather-proof. The Calco Bin cuts out the high cost of sacks. One Calco Grain Bin will last a great many seasons—sacks must be bought each year.

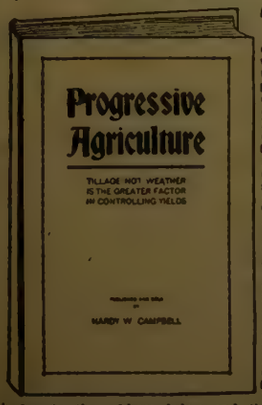
Write for the booklet, "Calco Grain Bins." It's free, and worth your careful reading. It will open a way to you to save and sell more of your grain. Write for it today.

California Corrugated Culvert Co.

421 Leroy St., Los Angeles 410 Parker St., Berkeley

Campbell's Progressive Agriculture

155 Pages—48 Illustrations.



THIS book contains 19 chapters, each dealing with specific factors of vital importance in all crop-growing questions. The New Tillage idea clinches the certainty of successful farming, not only in dry seasons, but any and all years. Timely tillage will control yields in spite of droughty seasons.

This wonderful book is being offered, including a three years' subscription to ORCHARD AND FARM, for one dollar and twenty-five cents. Mail your order today to the address below and the book will be mailed postpaid by return mail. This offer applies to both old and new subscribers.

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LOS ANGELES, CALIFORNIA.

Building Material Reductions

100,000 ft. choice second-hand galv. iron, 6c per ft.
2,000,000 ft. sound dimension lumber, $18 per M and up.
1,000,000 Star A redwood shingles.
Get our special reduction prices on following, ALL NEW, guaranteed.
200 12x60 boilers, galvanized.
250 vitrous toilet combinations, complete.
3 cars 5-ft. tubs complete.
100 20x30 sinks.
300 kegs standard wire nails.
2000 rolls ready roofing.
300 rolls chicken netting.
200 rolls barb wire.

Second-Hand

20 special sanitary hospital basins, good condition, very large, original cost $65, our price $15.

Also doors, windows, sash, frames, pipe, electric fixtures, globes, fittings, brass goods, metal tiling, lath, etc., etc.

Get our estimate for car lot f. o. b. S. F. or Oakland.

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Correspondence to 1527 Market st., S. F.

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SPECIAL SALE

8000 cans labeled or unlabeled Asparagus, green or white, 31-ounce, tall, at less than wholesale, 2 cans for 45c.

Pineapple, regular 15c, now $1.10 per dozen.

Pineapple, regular 20c, now 2 for 25c.
Leslie Shaker Salt, on sale, 3 for 25c.
Mixed Beans, small white, Bayo and red Mexican, 5 lbs. for 25c.
Long Grain Rice, 3 lbs. for 25c.
Long Grain Rice, 100 lbs., $7.25.
Special Sale Teas, very fine, 25c and 35c per lb.
Coffee and Cereal, ground; none better, 3 lbs. for 50c.
Santa Clara Prunes, 3 lbs. for 25c.
Fancy Mixed Nuts, 27c per lb.
Ceylon and Java Teas, regular 85c per lb., at this sale, 50c per lb., 5 lbs., $2.25.
Folger's Coffee, 2½ lb. can, 90c.
M. J. B. Coffee, 3 lb. can, $1.00.
Tuna Fish, 7 oz. cans, $1.00 per dozen.
Thelma Pork and Beans, per doz., 55c.

DEL MORRIS SALES CO.

2320 Mission St. San Francisco, Cal.

The Home Is the Expression of the Soul

The Home Is The Hub of the Universe

IT WAS an Englishman, just returned to his native land after an extended tour of America who, when asked to name the thing which had left with him the most profound impression, answered "Pie." "The Americans are a race of pie-eaters," he insisted. "They all eat it; they eat it two or three times a day. Why, I even heard a man order hot mince pie and coffee for breakfast! I never saw so much pie in my life as was consumed from the counters of the dairy lunches that I visited!"

Pie is essentially the American boy's and man's dessert. Perhaps, as a certain German professor once stated, it is ruining the nation's digestion, but we cannot help observing that we have developed a pretty good race of fighters on that sort of fare. In fact, pastry "like mother used to make" is officially recognized by our army chiefs as a big asset for fighting men; witness the enormous quantities of doughnuts distributed by the army canteens in France!

I believe it was old Aunt Mary who had but one formula for all the ills and eccentricities of man: "Feed the animal." There was more truth than fiction in her philosophy, and the woman who can make good pies possesses a powerful influence with which to direct the wills and reach the hearts of her "men-folks." Pie-making is an art worth cultivating, a truly Yankee art. Long live the American pie! If any of our readers have especially good recipes for pies, I should like very much to hear from them in order that we may pass along the suggestion to other subscribers.—Isabel Sinclair.

The Fireless Cooker

Have you a fireless cooker? I am delighted with mine. I never realized what a comfort it could be until I used it through some of the warm days during the early fall. The newer ones are so much more convenient and versatile than those which were first sold. In fact, it is possible to roast and bake delightfully, some dishes. And one can steam or boil the whole dinner. It is the means of saving a great deal of fuel, for it is only necessary to heat the food thoroughly before putting it away to cook. This heat is retained and so is all the flavor. For the farm home, where it is often necessary to feed a large number of men, a cooker is a very good investment.

That old faded sweater, moth eaten perhaps, can be made to do service again. One can dye it, ravel out the yarn, and reknit it!

Because of bad floors don't hesitate about discarding carpets for the more sanitary and easily-cleaned rugs. Some crack filler and a little paint and varnish stain will do wonders, even on soft, splintered boards.

Usually the reason children read trashy books is because no older person is directing their attention to what is good in fiction. So much depends upon the impressions gained by the little minds from books that it is worth considerable thought and care to see that no wrong ideas are developed from reading. Are you subscribing for a good children's paper or magazine? That helps.

Drying Pumpkins

Well-matured pumpkins of any variety make an acceptable dried product which requires only soaking for use in pies or custards. The deeply-colored, solid-fleshed varieties are the best for the purpose. Squash of the winter varieties also may be cured in the same way.

Cut into strips one-half inch wide, peel and remove seeds, then cut the long strips with a rotary slicer or by hand into slices one-half inch in thickness. Blanch in vigorously boiling water for three minutes, or preferably in steam for five minutes. A wash-boiler partly filled with boiling water and fitted with a support which will hold a wire basket containing the material just out of the water makes a good steamer. Some varieties blanch more slowly than others; the treatment should be continued until the pieces have lost the opaque character and have become transparent, but must be stopped as soon as this result is obtained.

Spread one or two pieces deep on the trays and begin the drying at 135 degrees. As soon as the pieces have become somewhat plastic the temperature may be increased, but should not be allowed to exceed 160 degrees at any time. The material should be stirred frequently in order to discover and spread out any parts which are not drying properly. If the drying is done in the sun it will be necessary to spread the material in a single layer and to turn the pieces over after a few hours' exposure.

Pumpkin or squash should be dried until the pieces are leathery and show no moisture upon the freshly cut surfaces when bits are cut open and strongly pressed between the hands.

As the material is removed from the drier, place it in a large clean pasteboard or wooden box, lined with paper, and cover to exclude insects by stretching a piece of mosquito netting over the top. Place the box in a warm, dry room and stir the material thoroughly daily, for ten days. The drying meanwhile slowly continues and the whole mass reaches the uniform condition which it must have before it is premanently packed.

Pack in pasteboard boxes lined with a double thickness of waxed paper, or in paper or muslin bags which are tied and placed in a larger bag. Store in a dry, warm, airy place.

Apple and Honey Jelly

Save sugar and make delicious apple jelly by using honey. A jelly of first quality can be made from winter apples and honey. Use a cupful of honey to each cupful of boiled down apple juice and proceed as in ordinary jelly making. Alfalfa honey gives an especially spicy taste to this jelly.

One canny housekeeper always puts the pocket on the inside of her apron. She learned to do this after she had torn out many pockets by catching them on chair arms and similar projections while about her work.

Old furniture is good material on which the present "making over" enthusiasm may work. Many an unsightly piece may be completely transformed by the elimination of ornamentation and a judicious use of stain and varnish.

MOTHER

By Strickland Gillilan

MOTHER is a little girl, who trod my path before me;
Just a bigger, wiser little girl, who ran ahead—
Bigger, wiser, stronger girl, who always watches o'er me,
One who knows the pitfalls in the rugged road I tread.

Mother is a playmate, who will always treat me kindly—
Playmate who will yield me what true happiness demands.
She will never let my feet stray into brambles blindly—
Mother's just a bigger little girl who understands.

Mother is an older little playmate who'll befriend me—
Yesteryear she traveled in the path that's mine today!
Never need I fear a foe from which she might defend me—
Faithful little pal who ran ahead and learned the way!

Washing the Rugs

The cleaning of heavy rugs presents difficulties to the busy housekeeper. The presence of dust in floor coverings, however, is recognized as one of the greatest enemies of good health in the home. A rather easy way to remove dust and germs from the rugs is first to clean the rug by sweeping with a rug brush or a vacuum cleaner.

It should then be washed with a solution made as follows: Two quarts of hot water made into a lather with Ivory soap or a Naptha soap. Add to this two tablespoonfuls of household ammonia and a cupful of gasoline. Using one-half of the mixture at a time, scrub the rug with a clean scrubbing brush. Have an old stocking, perfectly clean, to wipe off the excess of moisture.

It takes about twenty minutes to go over a 9x12 rug in this way, and if it is properly done the dust is taken out, the nap stands up firmly and the original color is restored. Old rugs cleaned and then treated with this lather have all their original freshness.

Left-Over Boiled Rice

Here is a use for small quantities of left-over boiled rice:

RICE WITH CHEESE—Heat one cupful of boiled rice in two tablespoonfuls of milk. Add one cupful of grated cheese, ½ teaspoonful of salt, and other flavoring if desired, and cook slowly until the cheese is melted. Then add one egg, well beaten. Serve on crackers or toast.

Care of clothes from day to day is more saving of garments than the practice of letting them get soiled and mussed and then using strenuous cleaning and ironing process. Of course, one can't always keep things right up to the minute, but a stitch in time is a wonderful thing.

America went into the war for a humanitarian ideal. Its great post-war task is no less humanitarian—to supply food to three hundred million people the world over. Keep on preventing food wastes. Twenty million tons must go abroad in 1919.

With war over, the boys and girls who have been side-tracked from education should go back to school and be encouraged to tackle their studies with the same enthusiasm they tackled their war jobs. Our opinion is that most of them will want to go to school.

It's not only the furnishings that count in making a home attractive; their arrangement is almost equally important.

The sacrifice of the American home, and the efforts of the American farmer, have removed fear of famine from the minds of our Allies, for this year, at least.

Don't expect the linoleum to keep fresh and neat without care. An occasional coating of varnish will do the business.

If a cracked egg is first wrapped in oiled or waxed paper it may be boiled as well as if it were not cracked.

They Fit and They Last-

Mayer

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WORK SHOES

Ask your dealer for Mayer Shoes. Look for the trade-mark on sole.

F. Mayer Boot & Shoe Co.
Milwaukee, Wis.

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Perfect hearing is now being restored in every condition of deafness or defective hearing from causes such as Catarrhal Deafness, Relaxed or Sunken Drums, Thickened Drums, Roaring and Hissing Sounds, Perforated, Wholly or Partially Destroyed Drums, Discharge from Ears, etc.

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"Little Wireless Phones for the Ears" require no medicine but effectively replace what is lacking or defective in the natural ear drums. They are simple devices, which the wearer easily fits into the ears where they are invisible. Soft, safe and comfortable. Write *today* for our 168 page FREE book on DEAFNESS, giving you full particulars and testimonials.

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869-878 Folsom St., San Francisco.

A Giant Vegetable

"BEANS" measuring from three to five feet in length and weighing up to twenty-six pounds have been produced by L. J. Billiou, a Porterville subscriber to Orchard and Farm.

The Giant Climbing New Guinea Butter Bean, as this extraordinary vegetable is called, is a species of edible gourd introduced originally into Australia from New Guinea, according to Mr. Billiou, who is giving considerable attention to its production.

He states that the vines appear to grow splendidly in California, except on the extreme northern seacoast,

New Guinea Butter Bean
An Interesting Edible Vegetable, Produced by a Porterville Subscriber

and that given three months of warm weather, they invariably produce immense crops.

The beans are a highly-esteemed delicacy in many localities, Mr. Billiou states. When prepared for the table they should be cut when young, at from three to six pounds in weight. The outer skin is removed, and the solid portion cut in pieces. This new vegetable may be cooked in the same manner as the ordinary butter bean, or fried like eggplant. It also makes an excellent preserve or pickle.

Advertised Articles

The editor frequently receives inquiries for the addresses of individuals or concerns who advertise in our columns. For instance, a subscriber will write and ask if we know where such-and-such an article may be obtained, when a careful reading of the advertisements would have disclosed the information and saved time for the reader. Therefore, we urge that before you write us to find the name of a manufacturer or dealer, you glance through current and past numbers of the paper to make sure that the article is not advertised. Ten chances to one, you will find just what you are looking for, because Orchard and Farm probably publishes a larger variety of ads than any farm paper in the West. If you don't find what you want, however, please write, and we will endeavor immediately to get you in touch with the right person or firm.

The poultryman has easy sailing except for a few enemies, among which might be mentioned foxes, minks, weasels, skunks, 'possums, ground hogs, rats, bad cats, turtles, owls, hawks, crows, snakes, lice, gapes, roup and cholera.

DURABLE DURHAM HOSIERY
Trade-Mark

"Some more of those stockings that wear so well"—

More Durable-DURHAM Stockings—the kind that everybody in the family likes so well because they are good looking and long-wearing.

A mother soon learns to know *good* stockings. She sees where they wear out first. She sees that Durable-DURHAM stockings are extra strongly reinforced at these points of hardest wear.

She learns that money is saved and darning is avoided by purchasing

DURABLE
DURHAM HOSIERY

FOR MEN, WOMEN AND CHILDREN

Made strongest where the wear is hardest

TAR HEEL

A medium weight sock with 3-thread, strongly reinforced heels and toes. Elastic ribbed top securely knit on. Feet and toes are smooth, seamless and even. Black, tan and white.

Price 25c pair

This hosiery is not only extra strongly reinforced to make it wear longer but is superior in other ways. Legs are full length and tops are wide and elastic. All sizes are correctly marked. Feet and toes are smooth, seamless and even. The Durham dyes are fast so that colors will not fade from wearing or washing.

Durable-DURHAM Hosiery includes styles for every member of the family, for work, play or dress, for every season of the year, retailing at 25, 35, 40 and 50 cents per pair.

For coldest weather, Durable-DURHAM Fleecy-lined Hosiery gives comfort.

This hosiery is strong and warm, with thick, soft fleecing that protects from Wintry cold. You should be able to buy Durable-DURHAM Hosiery at any dealer's. If you do not find it, write to our Sales Department, 88 Leonard St., New York, for Free Catalog showing all styles and we will see that you are supplied.

DURHAM HOSIERY MILLS
Durham, N. C.

ROVER LAD

A good medium weight substantial stocking for children. Triple reinforced knees. Strongly double reinforced heels and toes. Feet and toes smooth, seamless and even. Black and white.

Price 40c pair

ALPINE

A warm and comfortable stocking. Double fleecy-lined throughout. Full of warmth and full of wear. Extra wide and elastic flare top. Double reinforced heels and toes. Black only.

Price 35c pair

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SAMSON SIEVE-GRIP TRACTOR

GMC TRACTORS

MODEL S-25

Simplicity, dominant feature of the GMC SAMSON SIEVE-GRIP TRACTOR, goes hand in hand with efficiency. Correct design and few and accessible working parts assure low upkeep cost and long life to the GMC SAMSON SIEVE-GRIP TRACTOR.

Thousands of owners testify that where the GMC SAMSON SIEVE-GRIP TRACTOR goes the farmer's trouble ceases. This is its record for nearly two decades of trying service here and in far corners of the earth.

Mere youths are successful operators of the GMC SAMSON SIEVE-GRIP TRACTOR and, in the emergency, even women have proved equal to the task.

The GMC SAMSON SIEVE-GRIP TRACTOR performs tasks requiring the power of ten horses and does the work better, faster and cheaper than any other power. It is also adapted for many farm labors for which horses are unsuited.

The GMC SAMSON SIEVE-GRIP TRACTOR is simplicity itself.

Further information is furnished by our illustrated booklet, Better Farming.

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Division of

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For Wet Weather

The Men's Shoe illustrated above is made of the very serviceable "Wetproof" Alaska Seal leather with comfortable rounding raised toes and heavy soles. It is well finished throughout and an excellent value. We carry it in all sizes and widths.

Price **$5.50**

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A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

PLANS FOR POULTRY HOUSES?

ALL STYLES, 160 ILLUSTRATIONS, SEND 10c. Inland Poultry Journal, Dept. I, Indianapolis, Ind.

Information About Bees

(Continued from Page 26)

vina, Los Angeles county, an apiarist of thirty of more years' experience. The value of the Western Honey Bee lies in its policy of adapting the practices and improvements of Eastern and Southern beekeepers to Pacific Coast requirements, as well as in its timely reports. Bixby is a vigilant guardian of the rights of honey-growers, and the magazine deserves support from the entire craft on the Pacific Coast.

The American Bee Journal, $1.00 a year, Hamilton, Illinois, is the oldest magazine in the English-speaking world devoted exclusively to apiculture. Its ownership by the Dadant family insures its literary quality, which makes it unique among "trade" magazines. There are no better beekeepers than the Dadants. To them the craft has always been something more than merely a commercial enterprise. Owing to the Swiss origin of Charles Dadant, founder of the business, the American Bee Journal has correspondents in the chief honey-growing nations of Europe, and publishes frequent translations of up-to-date knowledge from foreign fields.

Gleanings in Bee Culture, $1.00 a year, Medina, Ohio, established by A. I. Root about thirty years ago, is a typical Yankee production. It is ably edited, profusely illustrated and is vitalized by contributions from leading apiculturists of the country, as well as from other English-speaking communities The Roots are among the largest honey buyers in the United States, and th ir journal reflects the commercial possibilities of the craft, just as the American Bee Journal reflects its literary and ethical possibilities. Both journals will prove to be worth far more than their subscription prices.

The Domestic Beekeeper, $1.00 a year, Northstar, Mich.; the Texas Bee Journal, and two or three other local monthlies, are valuable for side lights on the commerical possibilities of the craft, and are worthy of careful reading. The advantage of keeping in touch with this monthly output of literature is that it initiates one into the very heart of the fraternity, keeps up enthusiasm, and stimulates to better methods.

Free Information

Last though not least come the bulletins. These, issued periodically by the State universities and by the U. S. Department of Agriculture, are equally valuable to specialist and to amateur, and should find a place in the library of every beekeeper. These publications reveal the vast field of experiment and research opened up by modern methods.

The dominating function that honey-bees are already performing as pollinators of fruit blossoms, ranks our calling as something higher than a mere specialty of agriculture, it makes of beemen an order upon whom the duty of big fruit yields is the more insistently devolving as information and experiment are the better directed. A goodly company is enlisted in this mysterious and fascinating occupation, and the enthusiast will feel well repaid for keeping abreast of the progress that is making apiculture a truly sociological enterprise.

New Bulletins

Among the late publications of the United States Department of Agriculture are a number which are of interest to California farmers. Address the Division of Publications, U. S. D. A., Washington, D. C. These publications will be sent free to anyone who applies.

	Farmers' Bulletin
Farm Practices that Increase Crop Yields (Applies principally to Gulf Coast region, but contains information of general interest to California farmers.)	986
Important Poultry Diseases	957
Systems of Hog Farming in the Southeastern States	985
The Spinose Ear Tick, and Methods of Treating Infested Animals	989
Bean and Pea Weevils	983
Water Systems for Farm Homes (A 68-page booklet, illustrated; of practical value.)	941
Hemorrhagic Septicemia (Tells what is known about the serious disease known also as Stockyards Fever, Swine Plague and Fowl Cholera.)	1018
Terracing Farm Lands	997
The Spotted Garden Slug	959
Steam Sterilization of Seed-Beds	996

The following bulletins may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. They are very complete treatises.

	Plant Industry Bulletin
The Beet-Sugar Industry in the United States (10 cents)	721
Smyrna Fig Culture (10 cents)	732

Here are some of the latest publications of the University of California, distributed free from Berkeley:

	Bulletin Number
Commercial Fertilizer (gives names and analyses)	300
Control of Ground Squirrels by the Fumigation Method	302
California State Dairy Cow Competition	301

Dairy Optimism

Even at present high prices, dairy products are cheap foods when compared in importance and caloric value with other staples. They are always in demand, and from now on there will undoubtedly be a big foreign trade not only in the canned and stored dairy products, but in breeding animals. It is their belief in this future demand that has kept many large breeders and dairymen in the business at a time when they were operating under the most discouraging conditions.

Poultry Lore

(Continued from Page 23)

stitutes for Indian corn. Barley, too, is of more value than is generally realized. One California poultryman now feeds a mixture of hulled barley and milo, with small amounts of cracked corn, sunflower seeds and beef scraps, and has obtained excellent results. He also supplies his fowls with charcoal and bone meal and keeps oyster shell and grit before them.

A wet mash, fed hot in the cooler months, given preferably in the morning, can be made up of bran, meat scraps, alfalfa meal, ground milo and Egyptian corn. Into this put a small amount of salt. Try also mixing a small quantity of red pepper into the wet mash once a week, during the rainy months especially, as this simple remedy will keep the hens healthy and rustling. It has been proved that chicks do not consume as much when the feeders are kept filled as when just so much feed is given at certain hours. Therefore, it is wise to keep the hoppers filled with whatever grain one may have. Sprouted grain or other green feed is essential.

Feed for Hens

A good mixture for laying hens is four parts each of cracked corn and oats and one part barley or wheat, if available, which should be scattered in the litter. Provide four or five inches of good, clean litter.

A dry mash composed of equal parts of corn meal, bran, middlings, ground oats and beef scrap should be kept in hoppers to which the fowls have access at all times.

Plenty of exercise increases the egg yield.

Cabbages, mangels, sprouted oats, cut clover and cut alfalfa make excellent green feed for poultry.

Give the rabbits clean, dry quarters and there will be little disease if they are properly fed.

Many a family larder has been saved "by a hare's breadth."

The Farmers' Friend

(Continued from Page 22)

made with tremendous savings to the industry.

California Cotton

About ten years ago the Department of Agriculture began experiments with cotton at numerous localities in California, chiefly in the Imperial, California and San Joaquin valleys and to some extent in the Sacramento valley and the regions of Los Angeles and San Diego. This year the cotton plantings in California reached a total of 80,000 acres.

The principal variety is long staple cotton, mostly of the Egyptian type, large quantities of which the United States formerly had to import from Egypt. It is a kind of cotton that can be made to meet exceptionally severe requirements such as are encountered in the manufacture of automobile tires, airplane wings and balloon cloth. The pink bollworm is now ravaging the cotton fields of Egypt and there is no probability that, even with the war over, the former supply can be obtained from that source. California has developed a crop that is not only profitable to its own planters, but is of inestimable benefit to the country and to the world.

Desirable Foreigners

The Department of Agriculture has made California, in a very large measure, the home in which alien plants are naturalized. At the introduction station at Chico thousands of plants whose usefulness has been demonstrated, have been distributed to those sections of the country where they could be successfully grown. It was at this station that the usefulness of the amygadalus gavidiana was demonstrated. This is a wild peach from China that has proved to be one of the best root stocks ever introduced on which to bud both the peach and the almond. From the Chico station has been distributed the Chinese chestnut tree, quite resistant to the chestnut diseases that have so laid waste the native stock. And at this station also was propagated the jujube, or Chinese date, a plant especially well suited to the dry regions of the southwest, and one which will prove a welcome addition to the fruit crops of that section. From this station, too, was distributed the Chinese persimmon, now being grown quite extensively by many orchardists.

Co-operative Tests

Many other trees such as new varieties of apples, peaches, almonds and cherries are being propagated and distributed to growers. There are also being carried on by the California station a number of co-operative experiments in connection with other plants, such as the pistache nut (used in confections and for coloring ices) which is well adapted to the climatic soil conditions of California. Extensive tests in wheats and barleys are being made at Chico, together with the investigations of alfalfas and other forage plants. Important tests also are being made of different varieties of grapes and of dates from the date orchards of the old world. This station is also co-operating with twelve individuals and firms in California who are testing out new Guatemalan avocados to ascertain their value and adaptability to California conditions. There are also being carried out, by eight individuals and firms, co-operative tests with the jujube.

The results of much of the work already mentioned pertain exclusively to the Pacific Coast and to the southwest, and are not applicable to the country generally. This is because of the peculiar climatic conditions of that region. And is more strictly true of still other lines of work being done on the Pacific Coast.

The Bureau of Plant Industry, as an illustration, through the office of Western Irrigation Agriculture, is

(Continued on Page 34)

For Country Road Hauling

OF ALL the motor trucks offered for farmers' use, the **International** should be, and we believe is, the most satisfactory.

This Company knows the country—roads, farms and all. Farmers know our standards of quality and service. When we offer a motor truck for farmers' use it is understood that the truck will do the work expected of it at a cost farmers can afford.

The **International Motor Truck** is built for carrying capacity loads on country roads. It gives satisfactory everyday service, the kind that farmers must have. When an emergency comes—a tough piece of road, a steep hill, a rush trip, a bad day—the **International** has the reserve power, speed and endurance to carry it through.

There are four sizes of **International Motor Trucks**—1500, 2000, 3000 and 4000 pounds capacity, with bodies suitable for every kind of hauling. Chassis prices range from $1550 to $2650 cash f. o. b. factory.

If you know our local dealer, see the truck in his showroom. If not, write us at the nearest address below and we will see that you get full information promptly.

International Harvester Company of America

(Incorporated)

Billings, Mont. Crawford, Neb. Denver, Colo. Helena, Mont. Los Angeles, Cal.
Portland, Ore. Salt Lake City, Utah. San Francisco, Cal. Spokane, Wash.

Fertilize All Crops

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Nitrate of Soda

Small quantity per acre will increase your production and income.

Write or call for particulars.

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San Francisco.

"A dip in time saved mine"

Harness rots because the natural oils of the leather fiber dry out, and dust, sweat and moisture get in and cause rot. Eureka Harness Oil takes the place of the natural oils and keeps rot out—keeps harness strong, flexible and jet black. No animal oils in "Eureka"; rats, mice and other rodents dislike it and won't gnaw harness dressed with

EUREKA HARNESS OIL

MADE BY STANDARD OIL COMPANY (CALIFORNIA)

The Home Flower Garden

By Mrs. E. E. Paquette
1118 Polli Street, Ventura, Cal.

A HAPPY NEW YEAR to all the Orchard and Farm readers. And on the first day of our New Year, let us all resolve to work in our gardens as we never did before. Let us make our gardens help us show the world how happy and proud we are that we are citizens of this wonderful nation and State.

California has shown the world what she can do in the way of producing food, and still have plenty of land for flowers and ornamental plants. Therefore let us all do our best to make California home flower gardens the most beautiful in the world.

Let us resolve to plant:

Anona Cherimoia, the well-known "custard apple." The shrub is very ornamental; the blossom is the most fragrant flower known, and the fruit is delightful. It is simply the most delicious custard-candy-fruit that ever grew. Plant in a protected place.

Bignonia Cherere. For a good clean climber it is unsurpassed. It bears a trumpet-shaped, cherry-colored bloom that is very showy and will cover a long fence. The foliage is vastly different from the Begonia Venustia. The cherere has a thick fleshy leaf, clean and bright.

Choisya Ternata, the Mexican orange flower. It makes a pretty shrub, requires little or no attention, and in the summer months is covered with thousands of star-like blossoms having a rich perfume.

Delphinium, the well-known, old-time favorite. But the larkspur of old fashioned gardens was not to be compared with the beauties we have now. Plant in the permanent borders, and get plenty of the tall, light blue ones.

Eucalyptus. "In our gardens?" you say. Surely, some place in the corners or near the back fence you will have room for at least one of the flowering kinds. E. Ficifolia is the crimson flowered variety; E. Leucoxylon is the red flowered one, and E. Sideroxylon has pink flowers. When you plant Eucalyptus, don't plant just any kind that you can get. Use judgment and get the kind suited to your space and garden.

Feijoa, one of the best guavas. It must be planted in groups, as single specimens will not produce fruit.

Gailardia. A worthy plant that is often overlooked by the best gardeners, but it is one of the most faithful bloomers. Be sure and get the "good" one.

Hydrangea. Plant on the north side of the house in the shade, and fertilize well.

Iris. Plant rows and beds of them in wet spots and dry places. Plant all you can buy and beg.

Jasmine. The best winter variety is the Jasminum China which is a light, clean yellow in color and free blooming.

Kentia. This well-known house-palm is beautiful if planted in a protected place. I know of one specimen here that is ten feet high and a beauty.

Lemon. I do resolve to plant one more tomorrow. It combines beauty and utility at their best.

Myrtus Microphylla Nana. It is not nearly as impressive as its name, but is sweet and spicy and the best of hedge plants.

Narcissus. If there are any bulbs not planted, you can plant them now. Mulch the ones just coming up.

Orange. Every garden should have at least one Washington navel.

Prunus Pissardi. A pretty shaped tree with dark red foliage, and a very effective addition to any garden.

Roses. Plant white, red, yellow and pink ones; also get the flames and tri-colors, and plant climbers, bushes and dwarfs. And plant them now, right now.

Solidago, or golden-rod. No flower in my garden gave me as much pleasure this last year as did my golden-rod. A spray of the bloom with a purple aster or with the light blue larkspur makes a pleasing bouquet.

Thuya. You all know that is simply the "dressed up" name of our Arbor Vitaes. Plant the pyramidal ones in pairs at every turn of your walks. They will form growing gateways which will be a joy forever.

Umbrella Plants. In our pools and fish bowls they are dainty and attractive.

Veronicas. Plant them in your permanent border, and among your shrubs. Use them in masses and with other plants. Both the variegated and plain kinds are good.

Watsonias. You should get the bulbs and plant them now. They are tall, gladiolus-like, and have the whitest of white flowers.

Extra money, in the shape of fertilizers, and give the whole garden a liberal feeding.

Yucca. Every year when I drive through the San Fernando hills and see the wonderful bloom of the Yucca I wish I had one of my own and am now resolved to try one.

Zauschneria Californica, which is nothing more than a California fuchsia, and nothing daintier can be found in the way of fuchsias.

Let us resolve to cultivate our gardens and make them show the spirit of progress and prosperity that will rule the nation during the coming year. Let us also keep our gardens and our minds free from weeds.

One of the things that the extra effort in food production has taught us is that some of the most beautiful shrubs are food producers. Plant guavas along driveways and you have a beautiful hedge, or they make a good background for the perennial border. Nothing among the foliage plants is more showy than the rhubarb; the blue and white of Cantury berry bells or the tall blue larkspur make a good color scheme if planted next to rhubarb.

We have learned that next to the roses is an ideal place for an asparagus bed. The same mulch does nicely for both and after we are through with the tips in the spring we just let the asparagus grow, and the tall feathery foliage is beautiful. It is very effective when added to a bouquet of cut flowers.

We have learned also that the humble spud is the most effective thing to plant in carnation beds that have become infested with Johnson grass.

We have learned furthermore that nothing on earth is more beautiful than a plum tree in full bloom, and that this same tree will furnish plenty of jam and jelly. We have learned to be sensible in so many ways!

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Departemnt, Orchard and Farm, Examiner Building, Los Angeles.

2694—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. Size 10 will require 3½ yards of 40-inch material. Price 10 cents.

2680—Lady's Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 7 yards of one material, 40 inches wide. To make sleeves and overblouse of contrasting material as illustrated will require 3⅝ yards of material 27 inches wide for the 38-inch size. The dress measures about 2 yards at the lower edge. Price 10 cents.

2677—Misses' Dress

Cut in 3 sizes: 16, 18 and 20 years. Width of skirt at lower edge is 1¾ yards. Size 16 will require 3⅝ yards of 54-inch material. Price 10 cents.

2706—Girl's Dress

Cut in 3 sizes: 12, 14 and 16 years. Size 14 will require 4½ yards of 36-inch material. Price 10 cents.

2700—Child's Set of Short Clothes

Cut in 5 sizes: 6 months, 1 year, 2, 3 and 4 years. It will require for the dress 2⅝ yards of 36-inch material. For the drawers, ⅝ yard. For the slip, 1½ yards, for a 2-year size. Price 10 cents.

2697—Lady's Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42, and extra large, 44-46 inches bust measure. Size medium will require 4¼ yards of 36-inch material. Price 10 cents.

2678—Child's Rompers

Cut in 4 sizes: 2, 4, 6 and 8 years. Size 4 will require 2⅝ yards of 36-inch material. Price 10 cents.

2287—Child's Night Drawers

Cut in 5 sizes: 4, 6, 8, 10 and 12 years. It requires 3 yard of 36-inch material for a 6-year size. Price 10 cents.

2675—Lady's House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 6½ yards of 36-inch material. Width at lower edge is about 2 1-3 yards. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for our up-to-date fall and winter, 1918-1919, catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also some points for the needle, illustrating thirty of the various simple stitches, all valuable hints to the home dressmaker.

Use Coupon in Ordering Pattern

Herewith find.....cents for which send me the following patterns:

Pattern No..... Size.....

Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

The "Water Wand"

To Orchard and Farm:

I have often heard that it was possible to locate running water under the ground by means of a peach switch. I never believed this, but the assertion is met with almost everywhere that it is really possible. Will you enlighten me on this point?—R. O. S., Reno, Nev.

I must confess that I had always regarded stories about the "water wands" of various kinds as purely mythical until quite recently when I had occasion to visit a gentleman near San Luis Capistrano, who has one which he made from bits of metal and wire. He asserts that he gets the same results with a peach-switch, but that the metal "wand" is durable and permanent and he, therefore, prefers to use it, as it is more convenient.

The "wand" is made in "V" shape. He grasps one end of the "V" in each hand with the palms turned upward and outward, and walks slowly across the floor or ground with the end pointing straight out in front of him. At certain points (always the same) the end will turn suddenly almost straight down. If he faces the opposite direction on the same spot the end turns up instead. This movement is not uncertain, but very strong and positive. He states that the motion indicates the direction of flow of the underground stream. In his locality the end moves downward when he faces the ocean and upward when he faces the hills, indicating, he says, that the water flows towards the ocean. He asserts that motionless water underground will not affect the wand.

Skeptical of the power of the wand, several members of the party, including myself, tried it, and secured the same results. It is rather an uncanny feeling to have the point of the wand drawn violently down in spite of efforts to hold it. The effect is the same as though a strong magnet attracted the point. In some cases, one member of the party, by touching with the wet finger, the hand of the man who held the wand, could cause it to spring back to its normal position, just as though the electric "current" had suddenly been turned off and the attractive power "demagnetized."

I am prepared to state positively that something (I will not say it is underground water) does cause the wand to move, and that some strong influence acts upon it. A well-known engineer is quoted as saying of the water-wand that he did not understand the thing, but would never try to drill a well without using one. That is the way a good many persons feel, and one can find any number of advocates who will state that they have never failed to strike water where the wand gave a strong indication. I would like to hear from Orchard and Farm readers who have had experience with the wand.—The Editor.

Reason Enough

One morning Mr. Johnson was heard talking to himself while making his morning toilette in a manner that denoted much perturbation.

"I wonder," said Mrs. Johnson, "what's provoked Father now?"

"Oh, it's nothing much, Mother," answered little William "I just put a tube of sister's oil paints in place of his tooth paste."

A little touch of "Flu" keeps the whole world in.

J. I. CASE PLOWS

NO "DRAG"

THE J. I. Case Tractor Plow is one example of J. I. Case skill. This plow is famous for extreme light draft. The "drag" of furrow bottom and land side pressure have been eliminated. Besides, J. I. Case dustproof, easy-lubricating, long-distance wheels carry all the weight of the frame.

That's why this plow "rides" like any wheeled vehicle, instead of dragging like a stone boat. Easily handled from the tractor seat; has a simple, sturdy power lift and enters and leaves the ground instantly, point first, like a walking plow.

This J. I. Case plow makes the tractor a better investment because more acres can be plowed per day with a minimum of fuel, labor and repair expense.

See your J. I. Case dealer. He is usually the best dealer in each town. If you don't know his name, write us.

J. I. Case Plow Works
513 West 6th St.
Racine, Wisconsin.
Branches and Distributing Points at Douglas, Boswell, Sacramento, Calif.
Distributor for California, Oregon, Washington and Northern Idaho.

Minneapolis, Minn.	Denver, Colo.
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Saginaw, Mich.	Sioux Falls, S. D.
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Oklahoma City, Okla.	Great Falls, Mont.
Little Rock, Ark.	Richmond, Va.

Dealers Everywhere

REG. U.S. PAT. OFF.

Early Baart Wheat

Professor Gilmore of the University of California Agricultural Experiment Station has this to say about early Baart wheat:

We have grown Baart in our experimental trials at Davis for a number of years and it has yielded on a six-year average, 47 bushels per acre. At the same time it shattered somewhat more readily than some other varieties with the exception of Little Club. It is also not rust resistant and consequently in those sections where rust is noticeably prevalent would not be a very good variety.

Since large acreages of our wheat are each year cut for hay, this variety does not lend itself to that purpose quite so well as White Australian. We have not tried this wheat in Southern California, especially in the coast counties, sufficiently to enable us to compare it with Sonora, White Australian, Defiance and Propo; consequently we cannot say much about what it will do in these sections, although we think it is very much worth trying.

Finest Quality Best Varieties

We can highly recommend our stock of fruit and ornamental trees, including:

Catalog Sent FREE

European Sycamore (platanus orientalis)
The most desirable shade tree used in California. Universally sold all over the State. Transplants easily and grows rapidly.

Bartlett Pears on Quince Root
Double-worked on Beurre Hardy.

Boxwood (buxus sempervirens)

English Holly (ilex aquifolium)

Oregon Grape (mahonia aquifolium)

Persian Mulberries
Trees which will bear young and produce large, luscious fruit.

Niles Giant Rhubarb
Easily excels any other variety in the great size of the stalks, which are exceedingly crisp and juicy.

California Nursery Co. Estb. 1865
P. O. Box 412, Niles, Cal.

more

than a scrap of paper -the Ghirardelli label

The Ghirardelli label on the Ghirardelli can is *more* than a scrap of paper. It is a *dependable* assurance of Ghirardelli quality. It carries with it the *certainty* that you are getting the chocolate of highest purity and nutriment.

Always dependable —never disappoints!

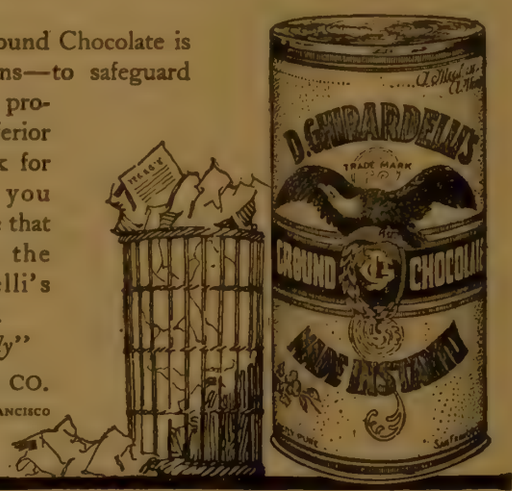
At the store where you do your trading —in ½ lb., 1 lb. and 3 lb. cans.

Ghirardelli's Ground Chocolate is put up *only* in cans—to safeguard your health and to protect you against inferior substitutes. Look for the label. Then you will be doubly sure that you are getting the *original* Ghirardelli's Ground Chocolate.

"Say Gear-ar-delly"

D. GHIRARDELLI CO.

SINCE 1852 SAN FRANCISCO



Ghirardelli's Ground Chocolate

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

OF

ORCHARD AND FARM

Published Monthly at Los Angeles, California

for October 1, 1918

STATE OF CALIFORNIA, COUNTY OF LOS ANGELES } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. Tyler Smith, who, having been duly sworn, according to law, deposes and says that he is the Business Manager of the Orchard and Farm and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Name of	Postoffice Address
Publisher, Country Life Pub. Co.	Los Angeles, Cal.
Editor, J. C. Knollin	Los Angeles, Cal.
Managing Editor, J. C. Knollin	Los Angeles, Cal.
Business Manager, W. Tyler Smith	Los Angeles, Cal.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

William R. Hearst, President	New York
M. F. Ihmsen, Vice President and Treasurer	Los Angeles, Cal.
A. T. Sokolow, Secretary	Los Angeles, Cal.
W. Tyler Smith, Business Manager	Los Angeles, Cal.

3. That the known bondholders, mortgagees and other security holders, owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities, are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain certain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise to paid subscribers during the six months preceding the date shown above is 39,450.

(This information is required from daily publications only.)

(Signed) W. TYLER SMITH, Manager.

Sworn to and subscribed before me this 13th day of December, 1918.

(Seal) H. O. HUNTER, Notary Public. (My Commission expires May 17, 1922.)

Horticultural Reconstruction

Maintaining that the present system of horticultural inspection, whereby the county commissioners operate under one law and the State Department under another, is inefficient and unsatisfactory, G. H. Hecke, State Horticultural Commissioner, has addressed a letter to Charles C. Moore, Director of the State Council of Defense, in which he outlines his ideas for the improvement of the system during the reconstruction period upon which we have entered. He does not, however, detract from the accomplishments of the county officers, merely stating that more efficiency would result from consolidation.

Three plans are suggested by Mr. Hecke, the adoption of any one of which by the legislature would result, he maintains, in immediate improvement of the situation.

The first of these is for the State to absorb, in their entirety, the institutions now known as county commissions of horticulture, to place their management under the jurisdiction of the State Commissioner of Horticulture, and to provide for the appointment, direction, payment and removal of all officers necessary for the conduct of the service.

The second plan is for the State to provide for the appointment, payment, direction and removal of officers to replace the present county horticultural commissioners and place the management of the same under the jurisdiction of the State Commissioner of Horticulture, the remainder of the horticultural inspection service in each county to remain upon its present basis of appointment and source of salary.

The third plan is for the State to provide for the direction and control of the county horticultural commissions by increasing the discretionary powers of the State Commissioner of Horticulture over them.

The Farmers' Friend

(Continued from Page 31)

conducting a series of experiments on the Yuma Reclamation Project near Bard, Cal., in the production and utilization of irrigated field crops. These experiments include tests of crop varieties and cultural methods in the production of cotton, grain sorghums, alfalfa seed, garden vegetables and fruit crops. Similar experiments are in progress on the Umatilla project near Hermiston, Oregon, with special reference to sandy soils of the irrigated region.

Forage Investigations

The office of Forage Crop Investigations of the same bureau is working at Chico with forage crops peculiarly adapted to California conditions, at Moro with forage crops for Oregon, and at Pullman with forage crops for Washington. And so it is with various other branches of the Department as for instance those of Sugar Plant Investigation, Alkali and Drought Resistant Plant Investigations, Acclimatization and Adaptation of Crop Plants, and the Seed Testing Labatory, all of which are working along specialized lines. Short of making an exhaustive survey of the entire Department, it is not possible even to tabulate them all.

And so it comes about that the expression of appreciation from Pacific Coast farmers of the work done by the Department of Agriculture cannot be complete. The average farmer probably does not know about one-tenth of the work that the Department is undertaking to do for the benefit of the farms and orchards of that region. For confirmation of its usefulness the Department of Agriculture must be content with such fragmentary, though definite, statements as those quoted at the beginning of this article. Its work is unselfish and frequently unheralded, and its helping hand is extended to all.

FARMERS CLASSIFIED MARKET PLACE

FARMS FOR SALE

FLORIDA FRUIT AND DAIRY FARM—Bearing orchard, pears, plums, peaches, persimmons, guavas, pecans, oranges and grapes. On improved road bordering lake, only 1¼ miles to depot. 30 acres level tillage for corn and cotton. 10 acre pasture. Milk sells at door ten cents quart and feed grows year around. 6-room cottage, good barn and poultry house. Aged owner's low price $2950. Easy terms. Tools included if taken soon. Details page 64 "Strout's Catalog," bargain 17 States; copy mailed free. Dept. 781. E. A. STROUT FARM AGENCY, Heard Bank Bldg., Jacksonville, Fla.

FOR SALE—640 acres of foothill land. $20.00 per acre; 1-3 cash, balance long time; 400 acres of this land has been farmed to grain for many years. New set of first-class buildings, 4 years old. Excellent stock ranch. Nelson Realty Company, "Pioneer Dealers in Almond Land," Arbuckle, Cal.

FOR SALE—160 acres in Panoche Valley, Calif. No better land than this. Silt soil; grow anything; especially adapted for apricots, prunes, almonds and alfalfa. Water can be had from eighty to ninety feet. $75.00 acre. B. Barshinger, Gilroy, Calif.

FOR SALE—In Sutter County, 20 acres Thompson's Seedless Grape vineyard, 9 years old. 4 miles from Yuba City, electric railroad station, school and store 1 mile. Jap camp and well on property. Price $5000.00. Address Box 586, Marysville, Cal.

FARM of 70 acres, 30 fenced, 300 bearing apple trees; free water; free cattle range, on R. F. D. route, 2 miles from school. $1500. Mrs. C. A. Berry, Mokelumne Hill, Cal.

FOR SALE—10 acres improved; 3-room house, barn, windmill, tank. Price $3500.00, $1100 cash, balance terms. Address O. E. Armstrong, Fulton, Calif. Route No. 4, box 152.

171 ACRES excellent small cattle ranch $3500; also 320 acres $2500; fine for cattle; bargains cash, no agents. Owner, 318 Soledad P. O., Cal.

FARMS WANTED

WANTED—TO hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

WANTED—To hear from owner of good farm for sale. State cash price, full description. D. F. Bush, Minneapolis, Minn.

REAL ESTATE

ORANGE AND LEMON GROVE for sale—20 acres 4-year-old Eureka lemons and 10 acres 5-year-old oranges and lemons. Lots of water. Nothing finer in California. Will be a big crop this season. Must sell quick to settle up an estate. No agents. No exchanges. Address C. W. Mount, 522 Higgins Bldg., Los Angeles.

WANTED—Small partly improved ranch, moderate climate; water, wood; lowest price, terms; owner only. Address E. W. G., 354 Howth street, San Francisco, Cal.

BARGAINS—BARGAINS. Send for free magazine of farms, businesses, wild land, exchanges, any kind, anywhere. Western Sales Agency, Minneapolis, Minn.

WANTED—To hear from owner of good farm for sale; state cash price, full particulars. D. F. Bush, Minneapolis, Minn.

ORANGE AND LEMON GROVES

500 Bearing Orange and Grapefruit Trees

18 acres, Brooksville, Florida, section. Wire-fenced tillage. Only ¾ mile to stores, schools and church. Owner's low price $2500. Easy terms arranged. Details page 63 "Strout's Bargain Catalog" 17 States. Copy mailed free. Dept. 781-A, E. A. Strout Farm Agency, Heard Bldg., Jacksonville, Fla.

ARIZONA LANDS

REGISTER NOW, ten, twenty, forty acre vineyard tracts in beautiful Bowie Valley, under immense irrigation system being developed; will be brought to bearing, schools, electric lights, phones, parks, streets, bathing; $100 cash, balance seven years. Opportunity calls you—register at once—only few tracts left. LIBERTY VINEYARD COLONY, BOWIE, ARIZONA.

COUNTRY PROPERTY FOR SALE

ABOUT 8 acres near San Francisco in Marin County, near depot, near electric lights and city water, house 6 rooms and bath, nice barn, other buildings. $200 down, rest like rent, $20 monthly till paid. Price $2225. A snap. F. A. Gobel, Englemine, Calif.

GOVERNMENT Irrigated Land

FOR ALFALFA, oranges, lemons, prunes, peaches, almonds walnuts, etc., can be bought on easy terms in tracts from 5 to 40 acres. Literature and information free by the Condon-Realty Co., Orland, Calif.

REAL ESTATE—Sale or Exchange

I HAVE 10 acres of land in Tulare County, Terra Bella District, clear title. I would like to trade on some larger acreage, the ten as first payment. Alfalfa nd hog land preferable. J. E. Winters, Box 81, Taft, Calif.

REAL ESTATE FOR EXCHANGE

WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

COMMERCIAL PRINTING

1000 BUSINESS CARDS for $1; letterheads, envelopes, bills, wedding work, show cards, rubber stamps. ROBERT HILL, 2188 Sutter St. San Francisco.

ASSAYERS AND GOLD BUYERS

GOLD, amalgam, rich ore bought, cash; assaying, 60c. Pioneer Assaying Company, 636 Market street, opposite Palace Hotel, San Francisco, Cal.

FARMERS CLASSIFIED MARKET PLACE

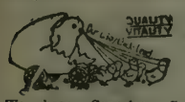
RATES

Our rate for classified advertisements is 3 cents per word for each insertion. Advertisements must reach us before the 21st of each month. Changes of copy of advertisements running till forbid must be in our hands by the 10th of each month preceding date of issue. Address ORCHARD AND FARM, Examiner Building, Los Angeles, Cal.

POULTRY

HOT AIR
is great stuff, coming up from the furnace, but it doesn't get you much of anywhere in the poultry business. Profitable results come from having experience, good judgment, and work. Don't let the experience cost you too much—there's where good judgment comes in. And don't forget the work part. How about buying chicks? Are you influenced by big claims de luxe adjectives, egg yields that came near "busting" the hen, cheap prices, high prices? Call on your good judgment again and play safe. When you can, investigate. Will you risk a card and send for our circular?
* * * * * * * * * * * *
We hatch, and try to hatch right. White, Brown and Buff Leghorns, R. I. Reds, Barred and White Rocks, Black Minorcas, at the rate of 12,000 weekly in busy season. Quality of breeding stock and chicks will please you, as will also the price and service. You can order a score or a thousand—safe delivery is guaranteed and delivered prices quoted when requested.
BREEDING COCKERELS FOR SALE.
THE MISSION HATCHERY, Box 7, Campbell, Cal.

Help Feed the World
Raise Baby Chicks



All the popular breeds every day. Fireless brooders, $2 and up. PULLETS—All breeds, egg producers.

We have Canaries, Cats, Dogs, Rats, Macaw and EVERYTHING IN HAIR, FUR AND FEATHERS. FANCIERS' EXCHANGE., 640 So. Main street, Los Angeles, Calif.

BABY chicks for sale—100,000 S. C. White Leghorn chicks from heaviest laying (Hoganized) stock for delivery every month in the year, at very reasonable prices. Safe delivery of all chicks guaranteed. Shipped safely anywhere west of the Rockies. No money in advance; pay on delivery. Finest hatchery in the world. Established 1898. Further information write
MUST HATCH INCUBATOR COMPANY,
432 Seventh St., Petaluma, Calif.

FOR SALE—Take advantage of this special offer of a year's subscription to the California Poultry Journal, the leader in California, or a one year's subscription to the Northwest Poultry Journal, the leader in the Northwest, including one year's (new or renewal) subscription to Orchard and Farm for only seventy-five cents, or both poultry journals for one year and Orchard and Farm one year for one dollar. Mail your order today to Orchard and Farm, Los Angeles, Cal.

STANDARD BRED RHODE ISLAND REDS. Some of California's best. Now booking orders for early delivery of hatching eggs. Six grand matings. Catalog free. Albert Sly, 1642 Middleton place, Los Angeles, Calif.

STRONG, vigorous baby chicks from Hoganized stocks, or hatching eggs from same select breeders. These birds are the result of years of culling out for higher eggs production, with high-type males brought in when needed to perpetuate fine egg ability. Hundreds of well-pleased customers can affirm above statement. Write for prices to JOHN C. BARR, Holyrood Ranch, San Gabriel, Cal.

OUR 200-290 EGG LEGHORNS, ANCONAS, Reds, Rocks, Minorcas, Wyandottes, Orpingtons, ducks clear $5.00 for customers now. Breeders' pullets. CHICKS: Half booked for January, February. March delivery, last year's prices. Many repeat orders. 30,000 capacity hatcheries full now. W. Beeson, Pasadena, Calif.

FINEST HATCHERY IN THE WORLD—Baby chicks, Rhode Island Reds and White Leghorns, settings, 100, 1000 hatched right in our $60,000 brick and concrete hatchery from our quality heavy layers; reasonable prices; stock hatching eggs. Pebbleside Poultry Farm, Sunnyvale, Cal.

FOR SALE—Early hatched cockerels. White Leghorns. Carefully bred for 15 years for vigor, heavy laying and standard requirements. Trapnested and Hoganized. McFarlane strain. A. Worel, R. D. 3, Napa, Cal.

MAKE capons of your cockerels and double your profit. Heavy breeds make 12-lb. capons. 8 weeks is good age. Caponizing 20c each. Instruments $4.50. Send stamp. Mrs. H. Ament, Capon specialist, Santa Monica, Cal.

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WELL, WELL—Here the White Plumage Poultry Farm and Hatchery is coming again, ready for another season. Our S. C. White Leghorn breeding stock is better than at any time during our 10 years of breeding. Therefore we can produce better and stronger baby chicks. Why not do your bit and help feed the world? It is none too early to place your order with us today. We guarantee safe delivery. Price, $15 per 100, $70 per 500 and $130 per 1000. H. A. Schlotthauer, Exeter, Calif. Route A, Box 148.

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No. 15-K

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EVERYTHING FOR THE BUILDER—All kinds of second-hand building material; doors, windows, lumber, shingles, corrugated iron, cement trays at the lowest prices, send list and get estimate; country orders and carload lots a specialty. H. McKevitt & Son, Wreckers, 1849 Mission street, near 14th, San Francisco, Cal.

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THE "BILLIKEN BRAND" OF CHESTER WHITES. Time to breed for spring litters. If you want some good growth spring pigs, you need one of my boars; have only 3 yearling boars left to offer. Have only 6 bred gilts left for December delivery. These are bred for March farrows. A few weaned fall pigs, both sexes. Raise better stock, you can do so by using the "Billiken" Chester Whites. C. B. Cunningham, Mills, Cal.

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START right. Registered Duroc Jersey weanlings. Three for $35. Satisfaction Guaranteed. Red Rock Ranch, Glen Ellen, Cal.

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BURBANK'S THORNLESS BLACKBERRY, two-year old plants, 25c each, postpaid. Send for our price list of berry plants, all kinds. Rosecroft Nurseries, Sumner, Wash.

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THERE are a few days in spring just right for proper seed bed preparation. With time so short and labor so scarce, the only way you can do the work in those few precious days, without slighting any of your fields, is to use equipment ade quate to the purpose.

Horse implements behind the unyielding power of a tractor cannot till the ground so fast and deep, nor stand up under the strain.

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Universally used and accepted as the highest standard of excellence in all disc harrow building. Meets every requirement of the man who tills a large acreage and wishes to do his work quickly and well. Guaranteed for strong construction. Made without unnecessary weight. Heavy enough to stay in the grounds at any engine speed and do good work, yet light enough to start easily and be economical of power.

Made in 8, 9 and 10--foot widths with oversize axles and bearings to give necessary strength. Weight boxes and special weight platforms provide for use when conditions require. Furnished with round or cut-away discs.

Double draft bars with flexible rear section are exclusively Roderick Lean features that give great working advantages. Rear section cannot track with the front section or slide on uneven ground. Hence this great disc ensures deep, thorough and uniform tillage, making a fine smooth seed bed. Turns easily, with the least possible strain and cultivates at an even depth while turning.

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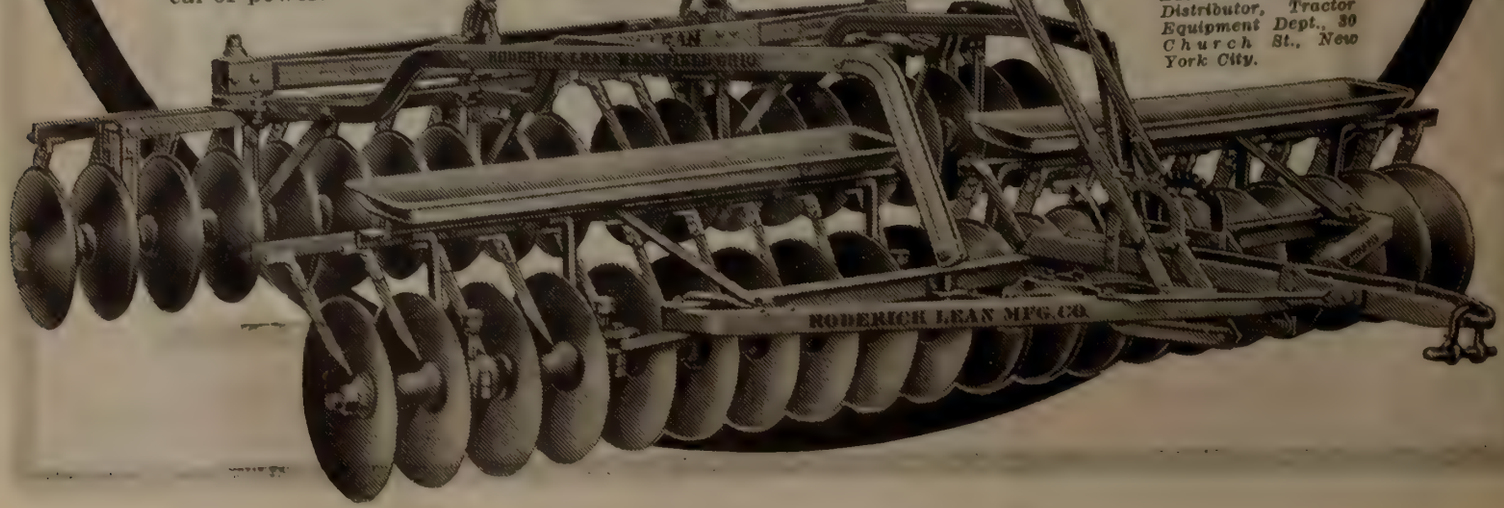

ORCHARD and FARM

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J. C. KNOLLIN, EDITOR. W. TYLER SMITH, MANAGER

Concise contributions on practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling why, when, where, who and how much.

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The Truth About Our Federal Farm Loan Bank

And How to Take Advantage of Its Service

5½ Per Cent Money
Term 5 to 35 Years

"IT looks like an easy way out," you say, as you think of the mortgage that will soon be due and the high rate of interest that you have been paying. Thousands of farmers have found that it is the easy way out, and the most satisfactory way not only to get out from under burdensome debts, but also to secure capital for needed expansion and improvements.

There has been much complaint about the "red tape" involved in securing loans from the Federal Land Banks. But before you condemn our local bank for past sins of omission or commission, read the following letter from its president, W. H. Joyce, who with his associates, deserves more credit than probably he will ever receive for the success he has achieved in launching such a tremendous and untried enterprise. While this letter does not explain certain cases of under-valuation of land, about which there was bitter, and probably justifiable complaint, especially in the Imperial Valley, it does show what difficulties had to be overcome during the first few months of the bank's existence.

As for the plan upon which the system was founded, most of the borrowers take the attitude that it is worth going through the required "red tape" in order to secure the benefits of the Farm Loan Act. Time alone will tell whether the plan was far-sighted or burdensome.

At any rate, it is certainly true that the misunderstanding and complaint met with from disappointed farmers during the early months of the bank's existence, were due largely to misunderstanding and lack of facilities for covering a very large territory. Now that these difficulties have been in a great measure overcome, every farmer should at least investigate the possibilities for him of a loan from the Federal Land Bank.—The Editor.

Berkeley, Cal.,
January 9, 1919.

Editor, Orchard and Farm,
Los Angeles, California.

Dear Sir:

Your editorial in the January number of Orchard and Farm will do much toward acquainting the farmers with the true functions of the Farm Loan Act, and the correct situation with regard to the management of the Federal Land Banks.

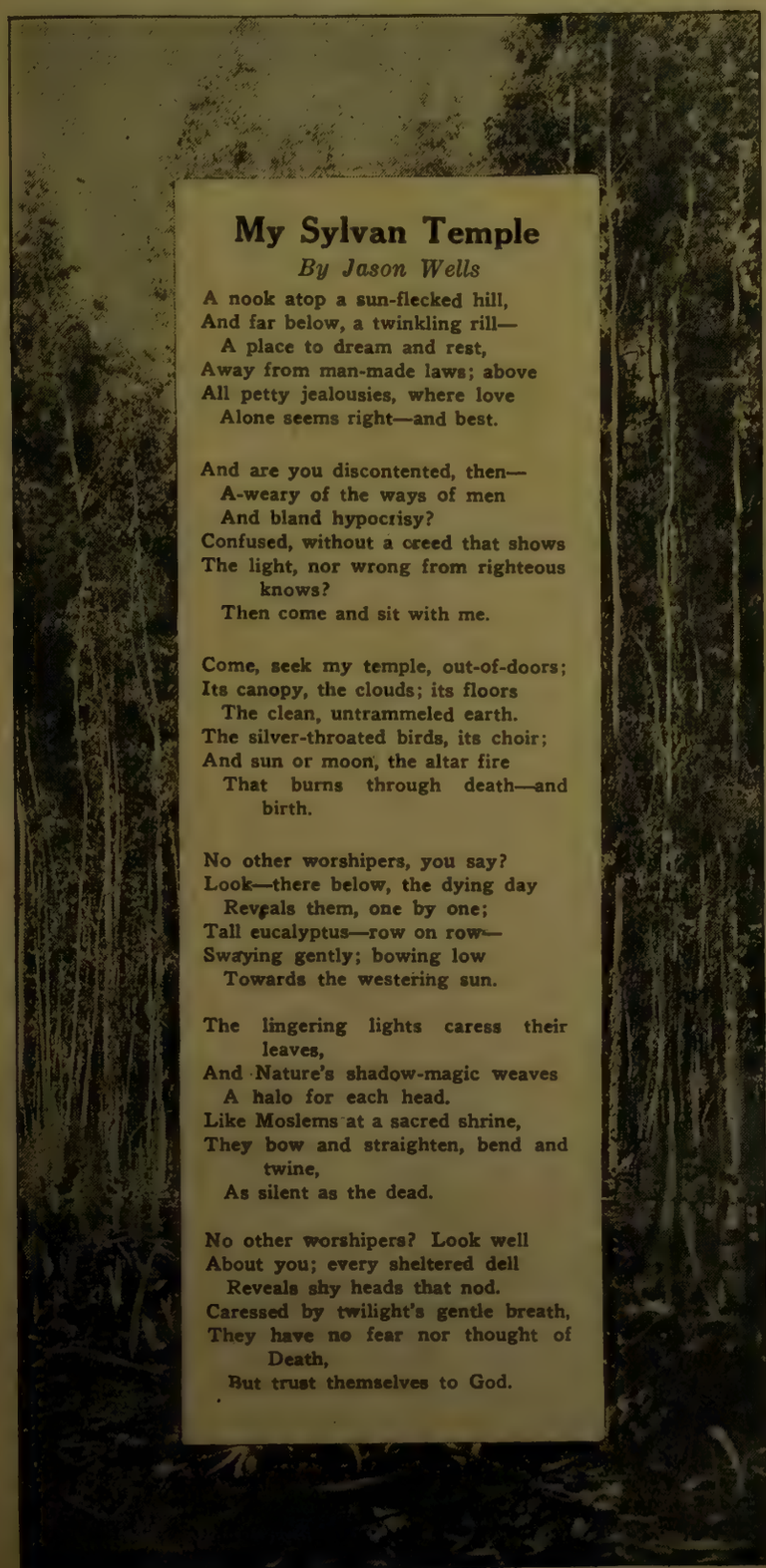
The most serious difficulty with which this bank had to contend at first was the fact that we were simply deluged and overwhelmed with thousands of applications for loans all over this great district which, as you know, embraces the states of California, Utah, Arizona and Nevada; and no human agency ever devised would have been able successfully and promptly to cope with such a situation.

On September 1, 1917, we had received over 5000 applications for loans and less than 600 had been passed on by the Executive Committee, and on that date only 106 loans, amounting to $415,000, had been closed.

Owing to the fact that the entire system was new, not only to prospective borrowers, but to the banks themselves, a great many errors were made and much confusion existed in the minds of the officers of National Farm Loan Associations. There was also a singular, though perhaps natural, impression in the minds of the people generally that there was an element of philanthrophy and paternalism in the system, and that it wa designed, to give credit to persons unable to get credit elsewhere. On this account the bank was compelled to reject thousands of applications and laboriously to explain the reason why, which was that every loan would have to serve as a basis for bond issue and that therefore the security for it would have to be permanent and unquestioned.

One can easily conceive the staggering task of organizing and educating a force of appraisers to examine nearly 5000 farms scattered all over

(Continued on Page 30)



My Sylvan Temple
By Jason Wells

A nook atop a sun-flecked hill,
And far below, a twinkling rill—
  A place to dream and rest,
Away from man-made laws; above
All petty jealousies, where love
  Alone seems right—and best.

And are you discontented, then—
  A-weary of the ways of men
  And bland hypocrisy?
Confused, without a creed that shows
The light, nor wrong from righteous
    knows?
  Then come and sit with me.

Come, seek my temple, out-of-doors;
Its canopy, the clouds; its floors
  The clean, untrammeled earth.
The silver-throated birds, its choir;
And sun or moon, the altar fire
  That burns through death—and
    birth.

No other worshipers, you say?
Look—there below, the dying day
  Reveals them, one by one;
Tall eucalyptus—row on row—
Swaying gently; bowing low
  Towards the westering sun.

The lingering lights caress their
    leaves,
And Nature's shadow-magic weaves
  A halo for each head.
Like Moslems at a sacred shrine,
They bow and straighten, bend and
    twine,
  As silent as the dead.

No other worshipers? Look well
About you; every sheltered dell
  Reveals shy heads that nod.
Caressed by twilight's gentle breath,
They have no fear nor thought of
    Death,
  But trust themselves to God.

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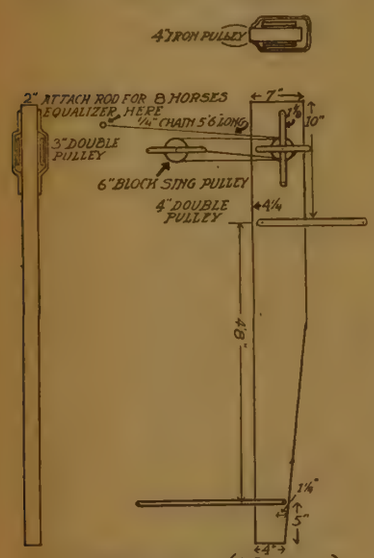
Less Horse and More Power in "Horse-Power"

"NEVER the twain shall meet," Kipling wrote of East and West. To be sure, his was a broader view than is furnished by the confines of our own borders; yet not many years ago this assertion was applied by the prophets to our United States. Those who made the statement, however, did not reckon with the hundreds of modern devices for the annihilation of distance; perhaps they even underestimated the prowess and daring of the pioneers who first linked the two sea-coasts. At any rate East and West have met and intermingled and become one.

Yet the agriculturists of the land were among the last to recognize this one-ness. It is but natural that this should have been the case. The nature of the farmer's calling and, until comparatively recent years, his isolation, tended to place him among the stay-at-homes. Better living conditions, organization, prosperity and education are among the important factors which have broadened the



viewpoint of the man on the land. And now, through rural and industrial organizations, educational institutions, and the various branches of the United States Department of Agriculture, as well as through the broadened lives of the farmers, themselves, the ideas developed in one section are being disseminated for the benefit of those in other parts of the country.

The Tables Turned

In recent years, perhaps more Easterners have come west to learn than vice versa, only to find that customs developed in the West might have been applied years ago to the advancement of their own interests. One indication of this situation is furnished by the multi-horse hitches used on western ranches. So vital a problem as the efficient use of horse power was not long overlooked by enterprising westerners. While they were developing their various hitches, and the "tying in" and "bucking back" system, corn belt farmers continued to plug along with their two and four-horse teams, each requiring a driver and the duplication of equipment.

Wayne Dinsmore, secretary of the Percheron Society of America, always alert to advance the interests of the draft horse, said recently of one of his trips:

"Last fall, within six weeks' time, I was in New England, Pennsylvania, Ohio, Illinois, Iowa, Idaho, California, Oregon and Washington. In New England, even on the valley lands, free from stone, two horses, a ten-inch plow and one acre per day was the rule. In Pennsylvania and Ohio sulky plows, three horses and 2½ to 3 acres per day was the usual thing. In Iowa and Illinois, two-bottom gangs, and four or five horses, turning from 4 to 5½ acres per day was the plan, even among the better farmers. But in Idaho, Oregon, Washington and California three-bottom plows with 8 and 10 horses or mules, turning 8 to 10 acres per day was the combination vogue among the better farmers; and they made less fuss over driving 10 horses than corn belt farmers do over driving five."

Is the Horse Essential?

Regardless of the introduction and use of other power units, some horses will probably always be needed in farm operations. Experience has shown that under mixed farming systems six draft horses is the minimum allowance on a quarter section farm and 8 to 10 horses the rule on a large proportion of the most effectively operated medium-size ranches. On many of these, especially livestock farms, all work is done by the owner and one or two helpers, who may be immature sons. On farms of this sort, the six and eight-horse hitches are found especially valuable, for one man can be started in the field, and the other, be he owner or employe, can proceed to different work, such as seed selection, adjusting machinery needed in the next farm operations, caring for livestock, hauling out fertilizer to fields, or some of the numerous other tasks waiting to be done on a farm. Actual experience has demonstrated conclusively that six, eight or ten horse hitches should be trusted only to the owner of the horses, who should be a first-class horseman, or to a son or employe who is an experienced teamster with his heart in his work. Careless, reckless employes, or boys too young to exercise discretion, should on no account be trusted with such teams. It must be reiterated in the strongest possible terms that large hitches will not be operated successfully by ordinary hired hands. An experienced, careful "skinner" is really a skilled laborer and deserves the greater compensation he is able to command.

Exhaustive Tests

In an effort to determine which of the different hitches in use in the west are most efficient, and to adapt them to corn belt conditions, Mr. Dinsmore, on behalf of the Percheron Society, recently conducted a very complete series of tests, enlisting the co-operation of professors of agricultural engineering in middle western agricultural colleges, as well as the services of Professor E. L. Potter of the Oregon Agricultural College, who has made a special study of hitches in use in western States. So interested did various organizations become in the work that it was extended over a period of months and taken up by some of the leading plow companies.

It was determined to make extended field tests of every conceivable hitch, for while certain 8 and 10-horse hitches have been used for twenty years on the Pacific coast, this was no proof that they were the best that could be devised. A hitch of four horses abreast on sulky single bottom, and on two bottom gang plows has been commonly used for many years in Illinois and Iowa, yet this hitch crowds the horses, compels them to pull at an angle, creates side draft, and increases the tractive pull required by at least 25 per cent. Knowledge of such facts made it imperative to test the work carefully.

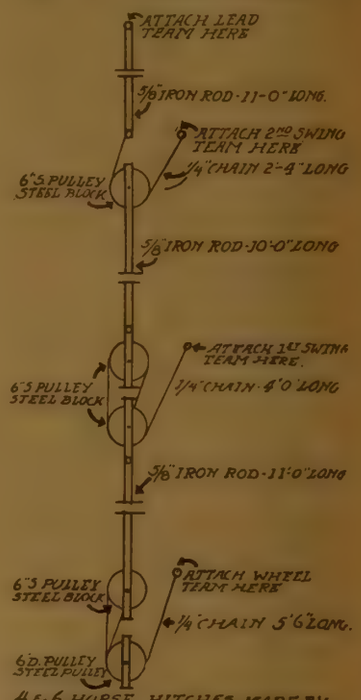
So exhaustive and extended an investigation could not fail to produce results of interest not only to corn belt farmers, but to the western ranchers whose methods were borrowed and analyzed.

Our Methods Analyzed

"Tying in" and "bucking back" are, of course, the principles involved in the simple systems of driving six, eight, ten or twelve horses by handling the leaders only. It is the use of these hitches, also, which makes it possible for the famous California "skinners" to handle 26 or 32-horse or mule teams on the big combine harvesters. The "touch rein" and the trained leader, of course, belong to the past masters of the art of horsemanship, but are not uncommon among experienced freighters.

It may be well to recall our common hitches for the benefit of readers who have not heretofore had occasion to use them.

"Tying in" consists of tying the near horse in each pair to the hame of the off horse with an ordinary tie-



strap, and tying the off horse (the furrow horse) to the draw-rod running forward to the next team. These tie straps should be just long enough to permit the horses to move straight forward when straightened out on a pull. When correct lengths are once determined a snap should be tied in at the proper point, so that in hitching up it is only necessary to snap it to the proper place after the neck yoke has been attached to the horses.

"Bucking back" or "bucking in" is done by taking a strap or rope 10 feet long, placing a snap or buckle on each end and a ring on the strap, running free. The ends of this strap are snapped into the bit rings so that this strap rides the same as an ordinary checkrein, but is slightly longer. An ordinary tie-strap is then snapped into the ring and tied back to a ring welded on the draw rod. The length of this, called a "buck strap" is adjusted by field test, and a snap then tied in at the proper point to snap into the ring on the draw rod. The buck straps should be so adjusted that the horses will work freely, but be checked when

Multiple Hitches Solve Many Ranch Problems

ever they are in danger of drawing the chain back against the pulley wheel.

The four, eight and ten-horse hitches which, as a result of the tests, were found to be most efficient, are described and illustrated by Professor E. A. White of the Illinois Agricultural College, whose conclusions are here given.

Details of Hitches

In order to use horses efficiently on the plow, hitches must be devised which eliminate side draft and enable the horses to work under favorable conditions. Most "abreast" hitches crowd the work animals and cause sidedraft on the plow. In order to overcome these difficulties, and work no horses on the plowed ground, some form of tandem hitch must be used. Brief explanations of these hitches follow:

For the disc harrow, which should be used with a tongue truck, the **three and four abreast hitch** is satisfactory when no larger units are desired. Six horses abreast take up too much room and cause crowding, and there is some danger of the outside horse turning into the machine. For this hitch a combination of three and three with extension tugs can be used. (No diagram is given of the six-horse hitch.)

Where heavy hauling is to be done it is frequently desirable to use more than two horses. To get a satisfactory three-horse hitch on a wagon, thills should be used. If more power is desired, the most practical hitch was found to be **two and two with extension tugs.** If this is used the neck-yoke must be fastened so that it cannot come off the end of the tongue.

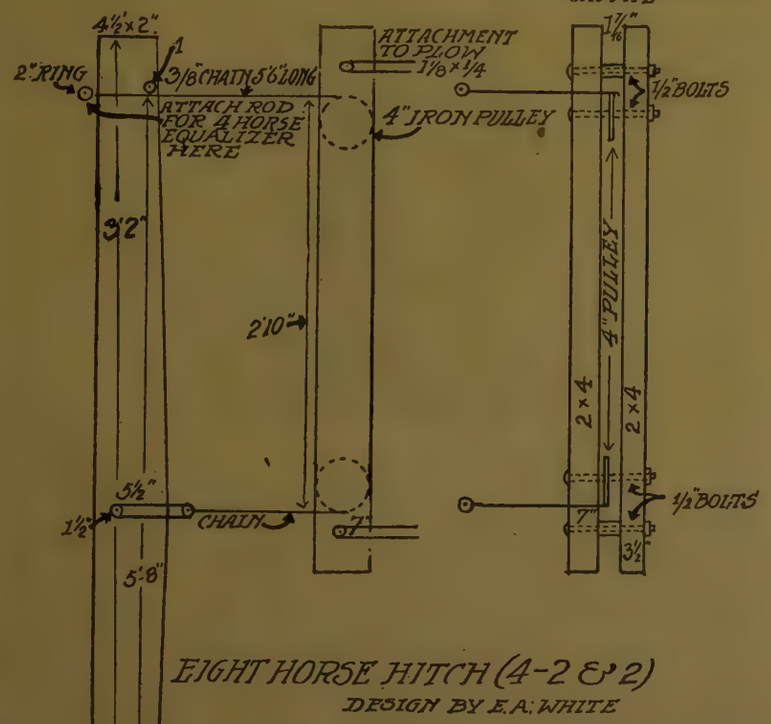
Many ranchers secure best results in using two and two on a wagon, by the employment of chains and "stretchers," so that the lead team is hitched direct to the front bolster of the wagon. If a chain is used it should be attached to the ends of two rods, each of which engages in an iron hook on the bolster. This centers the draft of the lead team along the line of the tongue, but places the strain at each end of the bolster instead of at the center. The chain is allowed to hang just high enough so that the wheelers cannot get their feet over it readily, being "hung" from the tongue by means of a rope, chain, wire or pulley, fastened about 18 inches back of the neck-yoke. The lead double tree is merely fastened to the end of the chain with a clevis. As an improvement on the chain one Idaho rancher made a device consisting of a long rod of half-inch round iron, in each end of which a ring was welded. The clevis was fastened to one ring and at the other end were linked permanently two short rods for attaching the long rod to the bolster of the wagon. This device has the advantage of not sagging like a chain and there is consequently less danger of the wheelers becoming entangled in it in case the leaders slack up suddenly. The rod, like the chain, is hung from the tongue, low enough so that it can not pull down on the wheelers, and high enough to be away from their feet.

The Tested Hitches

In order to secure the proper line of draft in all hitches described it

is absolutely necessary that the doubletrees, or eveners, be of the lengths specified. Wherever possible, the use of the wide singletrees, 30 or 36 inches, should be insisted upon.

4-Horse Hitch (2 and 2) Extension Tugs In this hitch a pulley is attached to the ends of each singletree. A chain, 13 feet long, goes around each pulley. One end of this chain is attached to the tug of the wheel horse and the other end to the tug of the lead horse. The hooks for the tugs of the wheel team should be large enough so that they will not pass through the pulley. In order to prevent the wheel team from going too far ahead, a ring, so large that



EIGHT HORSE HITCH (4-2 & 2)
DESIGN BY E.A. WHITE

it will not pass through the pulley, should be welded in the chain 18 inches from the end. If this hitch is used on a wagon, not over 12 inches of play should be allowed. These chains should be supported from the hames of the wheel team. This hitch should be made up as a self-contained unit.

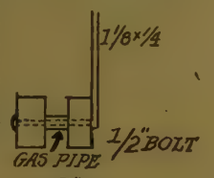
For 16-inch sulky plow use 44-inch evener and 30 or 36-inch singletrees.

For 24-inch gang plow use 44-inch evener and 30 or 36-inch singletrees.

For 28-inch gang plow use 50-inch evener and 30 or 36-inch singletrees.

Chains, 13 feet long. All measurements on eveners are given as center of hole to center of hole; "over all," 6 inches longer.

4-Horse Hitch (2 and 2) With Draw Rod In this hitch the pull between the lead and wheel team is equalized by a chain (2 feet 4 inches long) passing around a pulley. A ring, large enough to prevent the chain from being pulled out of the pulley, should be put in each end of the chain The equalizers for the wheel team are attached to one end of the chain and a draw-rod 11 feet long, is



attached to the other end. This draw-rod is supported by an extension from the neckyoke of the wheel team. The equalizers for the lead team are attached to the end of the rod. The equalizers for the wheel team should be attached to the end of the chain coming from the top of the pulley.

For 16-inch sulky plow use 44-inch evener and 30 or 36-inch singletrees.

For 24-inch gang plow use 44-inch evener and 30 or 36-inch singletrees.

For 28-inch gang plow use 50-inch evener and 30 or 36-inch singletrees.

5-Horse Hitch (3 and 2) With Draw Rod This is a very desirable hitch to use on a 28-inch gang plow. (No diagram is given.)

For 28-inch gang plow use 50-inch evener and 30-inch singletrees, with 11 foot draw-rod and a chain 2 feet 4-inch long.

6-Horse Hitch (2, 2 and 2) With Draw Rod In this hitch the team is strung out in three pairs. When plowing, three horses walk in the furrow. The pull is equalized by means of draw-rods, chains and pulleys. Behind the wheel team a block and tackle, consisting of two six-inch blocks, with single pulleys is used. The blocks are threaded with a chain (with a ring in each end) four feet long, so as to divide the draft of the load in a two to one ratio. The wheel team is attached to the free end of the chain and one of the pulleys to a ten-foot draw-rod; the other pulley is attached to the plow. This arrangement balances the pull between the two wheelers and the other four horses. The pull between the swing and lead teams is equalized by a pulley, exactly as in the four-horse hitch with draw-rod.

For 24-inch gang plow use 44-inch eveners and 30 or 36-inch singletrees.

For 28-inch gang plow use 50-inch eveners and 30 or 36-inch singletrees.

8-Horse Hitch (2, 2, 2 and 2) With Draw Rods In this hitch the team is strung out in four pairs. When plowing, four horses walk in the furrow. The pull is equally divided by means of pulleys and chains. Behind the wheel team a block and tackle, consisting of one block with one pulley and one block with two pulleys, is placed. This tackle is threaded with a chain five feet six inches long in such a manner as to divide the draft of the load in a three to one ratio. The wheel team is attached to the free end of the chain and a rod, 11 feet long, is attached to the one-pulley block. The two-pulley block is attached to the plow. The remainder of the hitch is the same as described for the six-horse hitch (2, 2 and 2) with draw-rods.

For 36-inch gang plow use 54-inch eveners and 30 or 36-inch singletrees.

For 42-inch gang plow use 60-inch eveners and 30 or 36-inch singletrees.

If eight horses are to be used on a plow this hitch is recommended in preference to the following eight-horse hitch (4, 2 and 2).

8-Horse Hitch (4, 2 and 2) With Draw Rods In this hitch four horses are used in the wheel team, two in the swing team and two in the lead team. When plowing, three horses walk in the furrow. By means of a special pulley attachment, illustrated in the diagram, the four wheelers on an ordinary four-horse evener are worked against the four horses comprising the swing and lead teams. The hitch for the swing and lead teams is the same as for the four-horse hitch (2 and 2) with draw-rod. This hitch should only be used on a three-bottom, 42-inch gang plow.

Length of four-horse evener 68 inches; length of eveners 34 inches; length of singletrees 30 inches.

10-Horse Hitch (4, 2, 2 and 2) With Draw Rods In this hitch four horses are used in the wheel team and the others strung out 2, 2 and 2. When plowing, four horses walk in the furrow. A large evener, 70 inches long, is used at the plow to work the two outside wheelers against the other eight horses. The pull between the eight horses is equalized by means of the same hitch as used for eight horses (2, 2, 2 and 2), except that the lengths of the eveners must be changed. This hitch should only be used on a three-bottom, 42-inch gang plow.

Length of large evener 70 inches; length of eveners 36 inches; length of singletrees 30 inches.

The Simple Secrets of Successful Tillage

By Hardy W. Campbell

[This is the second of a series of articles, written especially for Orchard and Farm]

"WITH God's help and good weather," is no longer a phrase applicable to all prospective crop yields. The man who chose a profession other than farming because he didn't believe in gambling has been laid to rest beside the Chronic Kicker and the Insipid Invalid. Progressive farmers in this progressive age are too busy keeping abreast with the times to ponder upon the ironies of fate. Yet deep-seated convictions are overthrown only with difficulty.

No more than four years ago one of the great agricultural colleges in the central west published a comprehensive bulletin under the title: Weather, Not Tillage, the Greater Factor in Controlling Yields. This doctrine, which was in line with the thought of most grain growers in the semi-arid west, was quite generally, and with the usual resignation, accepted as authoritative.

The Newer Agriculture

This theory, however, was in direct antipathy to the idea that man need not resign himself to Fate, but can do much, through proper seeding and tillage, to become independent of rainfall. This idea, which forms the basis of our theories, we have for many years supported by sound reason and conclusive evidence, with the result that hundreds of farmers who have practiced "progressive agriculture" are enjoying prosperity and plenty. It would seem that general enlightenment should now prevail.

But now there appears in the December 7, 1918, number of the Scientific American supplement nearly two full pages of material translated from an Italian publication under the following caption: "The Relation of the Weather to Agriculture." The author seems to be so sure of his position that he devotes considerable space to outlining a plan for keeping weather records. He contends that rainless periods of 20 days have much to do with the grain yield, and advocates especially noting just when these dry periods occur in each year, in order that a certain time for planting the seed may be established, and the usual rainless period be avoided when the ear or head of grain is forming.

In order clearly to indicate the position of this author we quote from the article: "The critical period for cereals falls within the twenty days just preceding the formation of the ear or head; if at this time rainfall is not sufficient to maintain the humidity of the soil above a certain limit the crop will be seriously jeopardized."

Not only do we strenuously object to the tenor of this writer's conclusions, but also we insist that through the medium of a properly formed seed bed, timely tillage, and the use of the correct quantity of seed such dry periods may be passed over with no detrimental effect. In fact, we assert that a 40 or even a 60-day drouth may be survived, with no reduction in the size of grains and no interference with their natural maturity. We will make the assertion even stronger by saying that careful attention to the physical condition of the soil will often result in an increase in the size of the heads even under adverse conditions, the results being more manifest in proportion to the thoroughness and timeliness of the work.

1—A STRIKING CONTRAST
Foreground: A Field of Wheat Managed According to Ordinary Methods; Yield, Nothing. Background: A Field Prepared According to the Campbell Method and Seeded With Only 20 Pounds to the Acre; Yield, 33 Bushels Per Acre.

First and Foremost

Of the various practices to be recommended for offsetting insufficiency of soil moisture, none is more important than correct packing of the seed bed. In fact, there is no one fact in connection with our entire work of more than thirty years that has gone farther or done more to solve the question of increased crop production in the entire semi-arid section than the discovery that the highest per cent of moisture cannot be carried through the season in the lower portion of the plowed part unless every section of it is made fine and firm and the top or surface portion is kept loose and dry. If the entire seed and root bed is left loose with numerous small cavities, then you have a soil and moisture condition that will require rain prior to and during the head-forming period. Not only is this true, but there are two other vital conditions which depend upon the observance of this principle. They are (1) bacterial action and (2) the development of a healthy, prolific root system for each plant or group of stalks.

Here Is the Man

Who has a real message. He knows what he is talking about and tells it in simple language. For over 30 years he has traveled about the country, most of the time in the employ of the big transcontinental railroads in an advisory capacity.

He has come to California to place before Pacific Coast farmers the ideas which have enriched hundreds of middle western and intermountain grain growers.

Campbell works with and not at the farmer. He is a student, but not a scholar; a progressive teacher, but not an idle theorist. What other men have done by using his methods you can do. He offers known facts and proven ideas; not dreams. He is, above everything else, a practical man. —The Editor.

The Ideal Seed Bed

The formation of an ideal seed and root bed is the basis of all successful crop growing. (In discussing the seed and root bed we have reference to that portion immediately below the loose soil mulch, where the seed is deposited and where the main rootlets are expected to grow.) Upon the physical condition of this portion of the soil for a considerable time before planting, depends very largely the result of the crop.

Then comes the second vital question: How much seed shall I sow? Overseeding exhausts soil moisture too quickly; don't lose sight of this fact; do a little good thinking. Suppose you had a pasture with feed growing just fast enough for ten cows and you put in thirty head; what would happen? This comparison shows clearly what the average grain grower is doing the country over; consequently, the apparent necessity of rainfall at the critical time referred to in the Italian publication. For it is a fact that if the soil is depleted of its moisture, below a certain per cent, during the most rapid growing period (and that period is just as the head is forming) then a reduction in yield or total failure is inevitable. But can such a catastrophe be averted by any other means than the application of water during the so-called "critical period?" It certainly can if proper steps are taken at the beginning and the correct practice carried through to the end.

The "Secret" Disclosed

The secret of averting the ill effects of rainless periods, as well as increasing the crop yield, lies mainly in the preparation of the ideal, fine, firm seed and root bed. It should, moreover, be prepared a considerable time before the seed is planted, and a loose mulch kept upon the surface. The seed bed must be fine and firm so that it will carry the necessary high percentage of capillary water with a low percentage of air.

This mulch should be about two and one-half inches deep over the surface, and it must be maintained in a loose and dry condition and not too fine, for two very distinct purposes; first, to hold the moisture continuously in the seed bed; second, to prevent the formation of a crust which might hinder the free access of warm air to this moist soil. We do not mean by this that a volume of air should reach the moist soil, but that the air should permeate through the unobstructed, minute pores of the soil. This is impossible when the surface is crusted.

The correct combination of moisture and air with the soil, especially in the presence of organic matter in the upper part, results in the optimum development of desirable bacteria, so vital to the rapid, healthy growth of the plant. But even after all this careful preparation, and surface cultivation is carried out, if too much seed is planted, the vital moisture will soon become so depleted that bacterial action will practically cease; then follows that difficulty mentioned in the Italian article, evidence of which is clearly shown in the three photographs.

Illustration No. 2 is a field of corn grown during a hot, dry year. No tillage work was done on this field until planting time, and a liberal amount of seed was used. While the land had ample moisture in early spring, little rain fell after planting, the hot winds came, and the picture tells the rest. Not an ear even started; the stalks dried up completely.

Illustration No. 3 is of a field directly across the road. The seed bed in this field was prepared and cultivated for 60 days prior to planting and was planted with about half the amount of seed with frequent cultivation during the growing season. The crop yield tells the rest of the story. Both fields were in practically the same condition at the beginning. Both experi-

(Continued on Page 27)

2—A FIZZLE
Improper Tillage and Heavy Seeding Produced the Results That You See in This Photograph. But Directly Across the Road Was the Field Shown at the Right of This Page.

3—A BIG YIELD
Produced Under Similar Conditions to Those Encountered in the Field Shown in No. 2, but Under the Campbell System of Tillage.

Feeding Steers

Over-stuffing Not True Economy

THE too generous use of expensive feed in raising young beef animals frequently represents a short-sighted policy. The opinion prevails in many quarters that unless young bovine stock is "crowded" from birth by full feeding, it is apt to become so stunted that loss will be sustained in the finishing process.

Proof that this is not always the case is furnished by a recent experiment.

Two beef steers were used, one of them fed generously from birth to 42 months old and the other kept on a maintenance ration from 2 months to 12 months of age and fed generously until 28 months old. The steer that was generously fed weighed 902 pounds at 12 months of age, while the steer that was fed on a maintenance ration until 12 months old weighed only 213 pounds.

Severe Conditions

The animal fed on a maintenance ration for ten months suffered severely from an insufficient supply of food. In fact, at the end of the period this animal showed symptoms of starvation. It was necessary to feed more generously in order to save its life. It is interesting to note that this particular animal had been subjected to adverse conditons more severe than would be at all usual on the average farm. The emaciated condition of the animal and the clearly insufficient supply of food resulted in stunting its growth.

If stunting the animal early in life destroys its capacity to grow or permanently retards its full development, then this animal should have shown evidence of such conditions.

The facts are that the animal maintained on a low plane of nutrition, when supplied with a generous ration for the second 12 months period of its life, gained 841 pounds in weight in one year, as compared with a gain of 500 pounds made by the animal fed on a generous plane of nutrition during the same period. The total weight of the animal on a low plane at 24 months old was 1054 pounds. The total weight of the generously-fed animal at the same age was 1401 pounds. Estimating the prices of feed on the same basis, the total cost of feed for the animal fed on a low plane was $76.31 for the 24 months' period. The total cost of feed fed to the animal on a high plane of nutrition was $121.44 for the 24-months period. The cost of each pound of live weight on the low-fed animal was 7.2 cents a pound. The cost for each pound of live weight for the generously-fed animal during the 24 months' period was 9 cents.

The important teaching of this experiment is that an animal maintained on a very low plane of nutrition during the first few months of its life does not necessarily lose the capacity to grow.

Let Us Substitute the High-Bred for the Hybrid!

STUDY the types of animals represented in the above drawing. If you have some like them, you are fortunate. If you have none, would they not look well on your ranch? We might have used other breeds to illustrate our point. The breed does not matter, for all fine farm animals represent the approach towards an ideal, or in other words, the application of creative effort. The newer agriculture, basing its creed upon maximum production commensurate with true economy, can find no place in its scheme for the scrub animal. Each of these animals stands as a living monument to progress.

The big draft-horse possesses the characteristic of producing the greatest possible power for the amount of feed he consumes. The beef animal has, and passes on to his progeny, the ability to cover his bones with a symmetrical block of meat. The porker, rounded and solid, is a far cry from the sabre-toother razor-backs that once roamed the woods. The dairy cow represents perhaps the greatest achievement in animal breeding, for her production has been trebled and quadrupled while seemingly the end is not yet, for new and astounding records are constantly being reported. The sheep has been given a heavy coating of marbled flesh and an even covering of wool; a type has been evolved which produces with equal facility these two important products. All this represents achievement. But still the ideal is far away; it always will be far away; that is what brings about progress.

The man who is content with scrub livestock is behind the times. The farmer who makes no effort to improve his grades is lacking in business judgment. The land owner or renter who has the facilities for raising animals and does not become interested in some way in livestock production denies himself a fascinating, useful and remunerative occupation.

California needs more and better livestock, especially upon her specialized farms. Creative, productive effort brings no richer reward than when it is wisely applied to animal breeding. There is no truer artist than the man who, by employing the wisdom and foresight of the successful breeder, moulds living flesh and blood into an ideal combination of utility and beauty.

Good Living and Good Livestock are Synonomous

Selecting Ewes for Farmers

PROFESSOR R. T. MILLER of the University of California College of Agriculture is here engaged in looking over a typical lot of aged range ewes, with a view to selecting a number to go on California farms. An increase of fully 15,000 head of sheep on California farms is believed to have been brought about by the "liberty flock drive." Napa county alone increased its sheep population by 4548 head; Contra Costa by 1500 head, and Stanislaus by 2500 head. It is safe to say that at least 200 California farmers, who never kept sheep before, now have small flocks of ewes on their places. Inasmuch as many of these ewes would ordinarily have been culled out and either sold to Eastern farmers from the markets or sent to the butcher's block, the campaign may be said to have added tremendously to California meat and wool supply. Orchard and Farm hopes to hear from some of its readers who have embarked on sheep-raising ventures, especially after lambs have been marketed and the profits for the first year computed. No doubt many of these new wool growers will make a surprising interest on their investment.

Breeding Terms

Some Technicalities Explained

HUGH G. VAN PELT, a dairy cattle authority and Jersey breeder of national reputation, gives the following explanation of some terms which are frequently met with, but not always understood.

It is certainly advisable to use a tried sire, especially if his breeding denotes that he is descended from high producing ancestors that were excellent individuals and more especially if he, himself, is of good type and conformation, but his blood lines must be such that he will "nick well" with the herd on which he is to be used.

To determine this all-important question necessitates knowledge of outcrossing, inbreeding and line-breeding. The reason animals do not nick with each other is because their blood lines are not congenial, or because the sire is not intensely enough bred to assert himself with certainty and transmit his characteristics and those of his ancestors with uniformity.

Effect of Outcrossing

Outcrossing is usually the reason for the failure. Very often outcrossing is thought of only as crossing two breeds. There are few who believe in the advisability of this, and none who do not recognize that crossing of breeds leads away from purity of breeding and into the channels of uncertainty.

Outcrossing also means the mating of animals belonging to the same breed, but representative of families not much more closely related than distinct breeds may be. This does not lead away from purity of breeding but does have the objection of rendering uncertain results. Used for a distinct purpose, outcrossing has produced excellent results when employed by expert breeders, but when it is followed merely because the bull used for outcrossing is a good individual and has a large record mother, or because he has sired some good daughters in another herd, the method is uncertain to the degree that a few good animals may be produced and a large number of disappointments are very likely to make their appearance.

What Is Inbreeding?

Inbreeding is the opposite extreme from outcrossing. Perhaps it is because outcrossing and inbreeding are extremes that they are more largely used by American dairymen and breeders, for Americans are given to following extremes in the hope of securing quickly that which European breeders have attained by scores of years of patient, thoughtful, intelligent work.

Inbreeding relates to the mating of animals very closely related, as the breeding of brother to sister, half-brother to half-sister, son to dam, sire to daughter, and so on. It is an excellent method of breeding when properly employed, but experience has

(Continued on Page 26)

Fighting Alkali

How the white plague of the soil was conquered by an Imperial Valley experimenter.

RECLAIMING of alkali land both in irrigated and non-irrigated communities presents a problem which has baffled many a rancher. Many different reclamation plans have been tried with varying results.

An interesting experiment, which thus far has been entirely successful, has just been completed by W. R. Lienau, director of the South Fern Farm Center, in Imperial county. Mr. Lienau has successfully reclaimed 30 acres of alkali soil which was white, a crust having formed over it. This feat was accomplished in the course of one year and during 1918 he raised his first crop, corn and cotton. Although the cotton which was of the Pima variety, produced an excellent crop, the corn did especially well, and Mr. Lienau recommended corn as the best crop to use on newly reclaimed alkali land.

Mr. Lienau employed a simple method. It can be used over large sections of California. The land, which was fairly level, was very hard. It was divided into sections, and checks were thrown up at intervals of about two hundred feet. Into these checks the water was run until it stood for a depth of six inches or more. This was done for the purpose of providing plenty of water to dissolve the mineral salts.

By careful analysis, it was ascertained that 36 hours was the best length of time to leave the water in any one check, as at the end of this time the water contained the largest percentage of salts. If the water is left longer, it is believed, there is a tendency for the salts to soak deeply into the earth, instead of dissolving and remaining in solution.

At the end of the period the water was drained off as rapidly as possible and a new supply allowed to run on the land. This process was repeated several times, until the analysis of the water showed that a large portion of the mineral salts had been carried off in the drainage.

The land was then plowed and corn and cotton planted.

Results the first year show that the crop itself brought in an actual profit and that the land is now worth from $125 to $175 on the market.

In summing up the essentials, Mr. Lienau states that first of all come hard work and irrigation. He also says that in his opinion this method can be applied profitably to many alkali sections of the State, now practically worthless.—Wm. S. Trewin, El Centro, Cal.

Study of Game Birds

A number of color plates illustrate graphically a volume on "The Game Birds of California" just issued by the University of California Press. The book deals comprehensively with every one of the 108 native game birds of the State. The hunter, the lover of the out-of-doors will find the book interesting as well as instructive. The volume may be had by writing to the University of California Press, Berkeley.

Is This Fact or Fancy?

DOES any one possess the power to locate underground water with a forked stick? Our answer is this: When Peter Pan in Barrie's famous play, comes to the footlights and pleads with the audience to demonstrate its belief in fairies, the response never fails; in every part of the theater there is immediately a great fluttering of handkerchiefs, not all of which are waved by the children. No doubt a storm of protest will result from the publication of these letters from subscribers, who insist that the divining-rod is a product of ancient superstition, incapable of performing any real service. Oh, well; there are even those who contend that there is no Santa Claus!

THAT the "water witch," with his magic wand is nothing more than an ordinary faker, and his mysterious powers existent only in the minds of his gullible followers is the assertion of a number of readers who noticed the reply in our January issue, to R. O. S. of Reno, Nev.

An Orange, California, subscriber, A. B. Campbell, writes: "It seems strange to me that in this day of general enlightenment, there are some people who believe in such absurdities. A so-called "water witch" tried to locate water in our neighborhood and the well digger found 75 feet of dry gravel and then came to bedrock. The digger then moved about one-half mile west to an old creek bottom and found plenty of water. I think the water wands should have an attachment put on them for locating bedrock."

It Turns, But ——

Another communication is from Walter Barber of Long Beach, whose interesting treatise on the subject we hope to publish as soon as space permits. He gives some of the history and myths surrounding the divining rod and has this to say about its turning power:

"As skeptical as I am after seeing many successes and failures with it, I must admit that the 'wand' turns beautifully for me. I have gripped it as hard as I could and my strength only seemed to add to its determination to turn. I have seen the point of a green wand turn down, stripping the bark in the hands of the operator.

"After studying its turnings for a considerable period I have come to the conclusion that it cannot do otherwise. It is like the Irishman's comment on Niagara Falls: 'I don't see how it can help falling.' My idea is that action is due to the peculiar shape of the forks, together with the manner in which it is grasped. As I remember it, you must grasp the two prongs firmly with palms up and of course, thumbs out.

"You have then two levers that develop eccentric motions with the slightest application of force. The only way in which the machine can move, once the eccentricity is provoked, is for the point to turn down or up. And the more force you apply to stop it the more sure it is to turn.

A Fallacy Exposed

"It will not turn if you hold it in any other position than the one prescribed. But, some one says, what starts or provokes the first motion of the twigs? 'Absolute knowledge have I none.' I do rather suspect, however, that some slight motion might 'start the wheels a-turning.' I suspect that it would be almost impossible for one to hold such a machine in one's hands a great length of time, wondering when it was going to turn, and not sub-conciously or otherwise develop a little more pressure on one prong than the other and so 'locate the water.'

"I have often wanted to 'try out' one of these wizards. But they won't play. I should like to have him locate the spot desired. I should like then to blindfold him and turn him around once or twice; then to see if he would not pass the same spot without finding water.

"While living back among the German people of the Middle West I have seen them plant their potatoes by the 'right' light of the moon; watched them smoke their hams at another phase of the moon; or been admonished not to kill a swallow for fear the cows would give bloody milk. One might go on indefinitely with similar beliefs which are probably more prevalent among the Germans than any other race. As for me I must place the 'forked stick' beside the moon phases, the bloody milk, eating Christmas dinner in Paris, and other German myths."

Cleaning the Well

Have you a dug well? If it has not been cleaned recently, inspection may reveal dangerous conditions. Here are a few hints that may be of practical assistance.

IF properly located, built, and protected, dug wells are more likely to be permanently satisfactory than any other kind, but to insure the safety of the water supply they require cleaning occasionally.

Even in protected wells dust and other foreign matter, which may pollute the water, are likely to gain entrance at the top, and the washing in of clay and silt with the ground water may make the supply unwholesome.

Cleaning the Well

The first step in cleaning a well should be inspection of the curb, which, if weak or defective, may make entrance dangerous. This examination may be made more thoroughly, and even the bottom of the well may be observed by the aid of a beam of sunlight reflected into the well by a looking glass. Next, lower a lighted candle to determine if carbonic acid gas has accumulated in the bottom of the well. Complete or partial failure of the candle to burn indicates that it is dangerous to enter the well.

If the well is found safe to enter, a ladder should be lowered and the curb from top down scrubbed with wire or other stiff brushes and rinsed thoroughly. The well then should be pumped as low as possible, and any mud, moss, or other debris should be scraped up into pails and removed.

Pumping Out Water

After thorough cleaning, the well should be allowed to fill and then be pumped out rapidly. This operation may be repeated to advantage two or three times, and often the work results in a freer, larger-yielding well. Many wells can be drained by hand pumping, but in other cases a power pump is necessary.

Unless there are special reasons for so doing, there is little use in attempting to disinfect wells with chemicals. The volume of water receiving the chemical solution can not be known definitely, and the results are neither certain nor permanent.

Short Tractor Course

February 24 to March 1, 1919

A short course in the management of gasoline tractors will be held this spring at the Citrus Experiment Station, Riverside, California.

To train tractor operators the University of California plans to give this course in tractor management, duplicating the course given for several years at the University Farm, Davis, Cal., and also given at Riverside last year, when over two hundred students were enrolled. Shop and tractor work will be offered on such fundamental questions as lubrication, care and adjustment of bearings and carburetors, grinding of valves, repairs and replacements. Several of the leading makes of tractors will be available for demonstration and practice work.

A registration fee of $1.00 constitutes the only charge for the course. Any one may register. Applications should be sent to the Dean, Citrus Experiment Station, Riverside, Cal.

Gears That Operate Without Oil

Mechanical practice calls for lubrication at all points where moving parts come in contact.

But AMSCO Manganese Steel — "the toughest steel known" — overthrows all precedents. It defies wear.

As proof of its amazing wear-proof qualities, gears and pinions of this metal are operated *without oil.*

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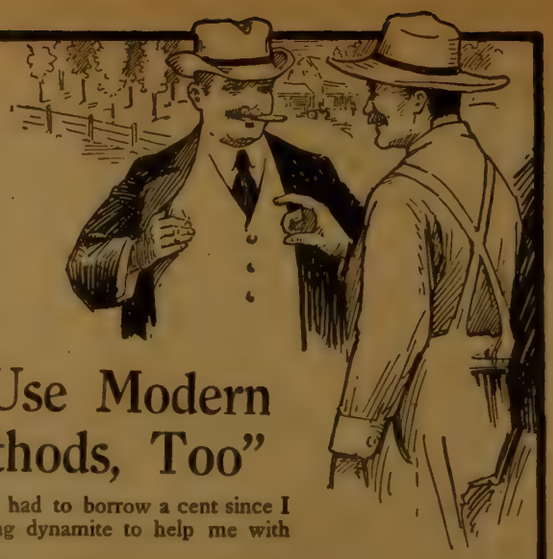

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"I am advising every one of my friends to send to the Hercules Powder Co. for a copy of 'Progressive Cultivation.' No one knows to how many uses dynamite may be put on the farm or in the orchard until he has read this book. The Hercules Powder Co. will mail a copy *free* to anyone who signs and sends in the coupon that is printed at the bottom of this advertisement."

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The Carob—a Wonderful Tree

By John S. Armstrong
President, Armstrong Nurseries, Ontario, Cal.

THE other day I read an article about the pomegranate. "It took 100 years," the writer said, "for California to appreciate this fruit."

No doubt, one could add several centuries to this estimate, for, although it was known and used in biblical times, its introduction into the new world is a comparatively recent event. Perhaps the carob has been even longer in "arriving" upon the modern horizon, for we know that it helped Moses out of his worries; it is said that he used the syrup of the carob bean to sweeten the bitter waters of Morah. And later, the historians tell us, John the Baptist, while wandering along the banks of the historic Jordan, was able to sustain life by eating of the abundance of carob beans that he found on the trees along the stream. As a result of this biblical incident, the carob also bears the name "St. John's Bread" and is supposed to have furnished in its seed and sweet pulp the "locusts and honey" which he found in the wilderness. Furthermore, there are students who insist that the dry pods of the carob were the husks that provided the subsistence of the prodigal son.

Whether these ancient bits of history are real or mythical, we do know that in Wellington's Peninsular campaign, carob pods furnished the principal sustenance of his famous cavalry; in fact, during the recent world war, they are said to have been used in great quantities as feed for the horses of the British armies operating in Palestine and adjacent countries.

A Pod Cluster

From a full-bearing carob tree. An important source of stock feed in foreign countries.

The carob, being a native of the Mediterranean basin, becomes at once suitable to our conditions, as we now grow with great success grapes, figs, almonds and many other fruits from the same countries. California, with its wonderful climate and rich soil, has only touched the possible resources involved in horticultural development.

As an Ornamental

First, but not foremost, the carob is a beautiful ornamental tree, suitable for the most exclusive boulevard planting, as well as for borders around country estates and orchards and along country roads. It is an evergreen tree, having glossy green leaves about the shape of the oak leaf, which are borne in panicles on a long stem, something like that of the locust. The foliage is very dense and, when fully developed, the carob becomes a most striking tree. Among other trees it stands out not only for its beauty of foliage, but for its symmetrical shape.

In the last few years numbers of carob trees have been planted along Southern California roads and streets and splendid specimens may be seen in Pasadena. There are also smaller trees, recently planted, along the Valley Boulevard west of Pomona, and in Fremont Place, Los Angeles.

A Dual-Purpose Tree

But the utility of the tree is attracting even more attention and, while it seems certain that there will be an increasing demand for stock for ornamental planting, a far greater demand is sure to come for budded varieties to be used for forage purposes. Little as yet seems to be known in California of the value of the pods for feeding horses, cattle, hogs and goats. Already, however, the annual production is of no little consequence.

In the native home of the carob, in the countries surrounding the Mediterranean Sea—particularly in Palestine, Turkey, Greece, Algeria, Italy and the Island of Cypress—hundreds of tons of carobs, valued at hundreds of thousands of dollars annually, are used for stock food and are exported to European countries, enormous quantities being used in England alone for feeding sheep, cattle and horses. In our own country, imported carobs form one of the principal ingredients of certain commercial stock foods. The natural question then is, why not grow carobs in California. We believe the question will soon be answered by extensive planting, perhaps first by some of our adopted residents who know the value of this crop in their native lands. This particularly applies to our friends from Italy, a number of whom are planning to set out quantities of the trees this year.

Seedlings and Budded Trees

Carob trees are both dioecious and hermaphrodite, or self-fertilizing. By this we mean that some trees have only the male flowers and do not produce pods; some have only the female flowers and must have trees producing male flowers near by for pollenation, while some trees have both male and female flowers and therefore produce an annual crop of pods. Although some horticulturists advise budding a male branch into each female tree, it is, we believe, best to buy trees grown from buds which have been taken from a tested tree, bearing both male and female flowers.

In our experiments we found that the carob was very hard to grow from seed; we planted many pounds of valuable seed, only to lose the seed or plants soon after sprouting from attacks of damping-off fungus. Patience and persistence, however, finally resulted in the discovery of a process whereby it was comparatively easy to produce plants from seed.

Varieties of Carobs

This accomplishment, however, did not end the difficulties encountered. We discovered that it was not feasible to grow the trees in the nursery fields, as very few buds would grow, and it was difficult successfully to ball and transplant the trees. It therefore became necessary to grow the plants in boxes in order to prevent their becoming root-bound and therefore undesirable. After many experiments, L. E. Nigh, an expert avocado bud-

(Continued on Page 30)

Two Very Popular Apples

That Have Found Favor by Their Flavor

THE two quality kings in the apple districts of the northwest are the Delicious and the Winter Banana. G. W. Pellett, an Ashland, Oregon, orchardist, in 1917 sold $200 worth of apples of the last mentioned variety from a quarter of an acre of ten-year-old trees. One tree bore a dozen boxes. The price received was $1.75 per box, a carload having been shipped out at that price, which is nearly twice as much as that received for other varieties.

Albert Johnson, another Ashland grower, has picked as high as a half dozen boxes from a single six-year-old Delicious. This variety sold at retail as high as $3.00 a box here in this apple-producing region the past season. Johnson prunes and thins severely, cultivates thoroughly, manures heavily and irrigates often. Pellett performs all these operations in a much lesser degree, yet attains a good measure of success.

True to Name

The Delicious is a comparatively new variety and has probably been more widely advertised than any other apple. New sorts which are loudly boomed are generally of little value,

It Is Delicious

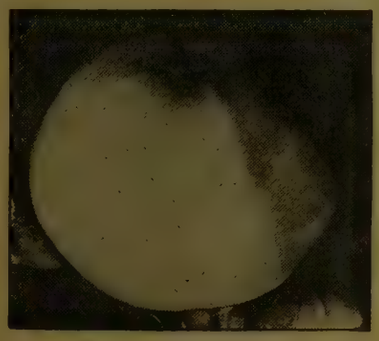
In name and flavor. If you are from Missouri, you will not have to be "shown," for all Missourians appreciate and are proud of this native of their home State.

but the Delicious is an exception to this rule, possessing much real merit. The tree is a strong, vigorous grower, hardy, not susceptible to blight and a heavy annual bearer. "Delicious" is a word which well describes the flavor of this variety, which has a peculiarly attractive taste.

It ripens about the same time as the Banana, which it resembles in quality, although it is somewhat more highly flavored. The color is dull, striped red and the flesh is yellow. The size is medium to large when the fruit is properly thinned and otherwise well cared for. A distinctive feature is five prominent lumps or ridges at the blossom end, something like the old Sheepnose. It is rather tender for long shipping or rough handling and is not a good keeper.

The Winter Banana

The Banana is a large, beautiful apple, yellow in color, with a delicate pink blush on one side similar to the old Maiden Blush. When properly grown the apples pack 80 to 113 to the box. A distinctive mark is given by one or more sharp ridges running



A Banana Flavor

Makes this apple distinctive. Although not an especially good keeper or shipper, it is extremely popular with consumers near the localities where it is grown.

from stem to calyx. The Banana has a rich, aromatic flavor, slightly suggesting the tropical fruit from which it is named. The flesh is soft, mild and sub-acid, inclined to be mealy when overipe. The skin is thick and leathery; yet on account of the softness of the flesh this apple is easily injured by bruising. Season: November and December. This variety is seldom attacked by scab, but is susceptible to Baldwin spot. The tree is a good grower, with spreading, drooping habits requiring little thinning, pruning or propping.

Although the above varieties can be profitably grown in a small way to supply the demand for fancy eating apples in the late fall and early winter, there is more money to be made, as a general thing, in growing the standard commercial varieties. For eating, cooking, keeping and shipping qualities the Newtown and Spitzenberg are unquestionably superior to the Delicious and Banana in this section.—O. H. Barnhill, Ashland, Ore.

Arsenate of Lime

Experiments thus far made by the Bureau of Entomology, United States Department of Agriculture, indicate that arsenate of lime may be used in all situations where Paris green has been employed, and that for pome fruits (apple, pear, quince) it will often be a satisfactory substitute for arsenate of lead (the present cost of which is much above normal) when used with lime or fungicides containing lime.

Pear Blister Mite

The blister mite, which has proved a serious pest in pear orchards in the mountain districts, has been found to yield readily to spraying during the early winter months with lime-sulphur solution. Complete eradication or "100 per cent results" is reported by county horticultural commissioners who have used the spray for several successive years. Spring spraying has not proved so successful.

Olive Statistics

The United States consumes each month over $1,000,000 worth of olives and olive oil.

Although Italy, Spain and France have a larger acreage, California has the biggest single grove in existence, and the quality of the home product is pronounced by experts to be superior to the foreign importations.

There are 3,000,000 olive trees in the State, one-half of them bearing. They produce a million gallons of pickled olives and 800,000 gallons of olive oil.

About 60 per cent of the olives go into oil; from a ton, 35 to 40 gallons of oil is made.

A million young trees are being propagated and California has over 3,000,000 acres of untouched land suitable for olive production.

California has a monopoly on ripe olives in this country, since the European product does not prove a commercial success.

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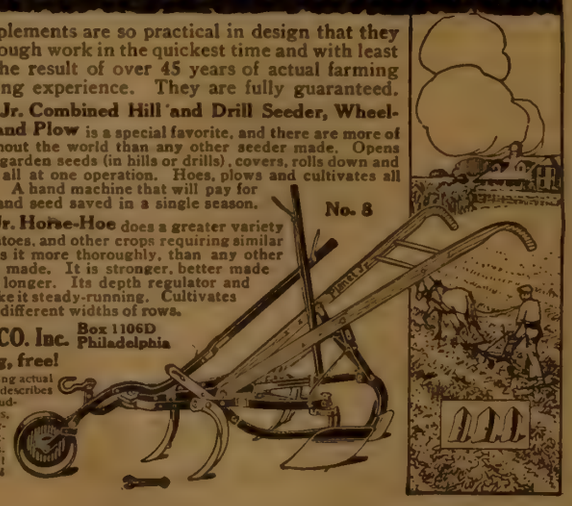
Planet Jr. implements are so practical in design that they do the most thorough work in the quickest time and with least labor. This is the result of over 45 years of actual farming and manufacturing experience. They are fully guaranteed.

No. 4 Planet Jr. Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator and Plow is a special favorite, and there are more of them in use throughout the world than any other seeder made. Opens the furrow, sows all garden seeds (in hills or drills), covers, rolls down and marks the next row all at one operation. Hoes, plows and cultivates all through the season. A hand machine that will pay for itself in time, labor and seed saved in a single season.

No. 8 Planet Jr. Horse-Hoe does a greater variety of work in corn, potatoes, and other crops requiring similar cultivation, and does it more thoroughly, than any other one-horse cultivator made. It is stronger, better made and finished. Lasts longer. Its depth regulator and extra long frame make it steady-running. Cultivates deep or shallow and different widths of rows.



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Dairy Bull Associations

Numerous benefits are derived from co-operative ownership of registered sires. The plan is in successful use in many sections of the country, and might be employed to good advantage in many California communities.

DAIRYMEN who would like to use pure-bred bulls to improve their herds, but who can not afford to purchase such animals should investigate the advantages of a co-operative bull association. These organizations are formed by farmers for the joint ownership, use and exchange of pure-bred sires. The purchase price and cost of maintenance are distributed according to the number of cows owned by each member, thereby giving the dairyman an opportunity to build up his herd at minimum expense. The organization also helps its members to market dairy stock and dairy products; to fight contagious diseases of cattle intelligently, and in other ways to assist in improving the dairy industry. Farmers' Bulletin 993, recently issued by the United States Department of Agriculture, gives directions for the organization and operation of bull associations, together with constitution and by-laws necessary for such an organization. (Address, Division of Publications, U. S. D. A., Washington, D. C.)

Associations Develop Rapidly

The first bull association in the United States was organized in 1908 by the Michigan Agricultural College. It was a co-operative venture similar to those which have existed in Europe for a long time. On July 1, 1917, there were in this country 36 active associations in 17 States, with a total membership of 1158, owning 189 pure-bred bulls. Many more have since been established. These co-operative organizations enable the owners of small herds to unite in the purchase of one good bull, so that each may own a share in a registered sire of high quality. Though still in its infancy, the co-operative bull association movement promises to become eventually a very great factor in the improvement of dairy cattle in the United States.

Details of Plan

The typical co-operative bull association as recommended by those who have studied existing organizations, is composed of from 15 to 30 farmers who jointly own five bulls. The territory in which these farmers live is divided into five "breeding blocks," one bull being assigned to each block. As many as 50 or 60 cows may belong to the farmers in each block, and the bull in the block should be kept on a conveniently located farm. To prevent inbreeding, each bull is moved to the next block every two years. If all the bulls live, and if all are kept until each has made one complete circuit, no new bulls need to be purchased for ten years. In this way each member of the association has the use of good pure-bred bulls for many years, at a cost of only a small part of the purchase price of one good bull—usually less than is invested in a more inferior bull owned by individual dairymen.

In a survey conducted on 1219 farms in eight districts in which there were no associations, it was found that there were 817 bulls, having an average value of $76. Had the owners of these cheap bulls been properly organized, the same investment would have purchased the necessary bulls of an average value of $283. In one association having more than 100 members the original cost of good pure-bred bulls to each member was only $23. When questioned regarding the value of co-operative bull associations, 150 farmers estimated that the use of bulls belonging to the organization increased the value of the offspring in the first generation from 30 to 80 per cent, with an average of 65 per cent.

Good Blood

The selection of the bulls for an association is one of the most important considerations. A good pure-bred bull will make rapid and marked improvement in the herds, and the association interest increases in proportion to the improvement obtained. If a poor dairy bull is used the milk production of the members' herds is sometimes reduced, the interest is lessened, and these conditions may lead to the breaking up of the association. Success in the operation of the association depends a great deal on the care that is used in its organization.

Weight of Milk According to Fat Content

The weights of milk and cream containing various amounts of fat have been found by recent experiment to be as follows, at a temperature of 68 degrees:

Skimmed milk of a fat content of .025 per cent weighs 8.63 pounds per gallon, while milk which tests 3 per cent butter fat weighs 8.6 pounds per gallon. Milk which tests 3.5 per cent weighs 8.59 pounds per gallon; while 4 per cent milk weighs 8.58 pounds; 5 per cent milk weighs 8.58 pounds, and 6 per cent milk weighs 8.57 pounds per gallon.

Mixed milk and cream of a 10 per cent fat content weighs 8.53 pounds, while a similar mixture of 15 per cent fat content weighs 8.47 pounds per gallon.

Twenty per cent cream weighs 8.43 pounds, 25 per cent cream weighs 8.39 pounds, 30 per cent cream weighs 8.35 pounds, 35 per cent cream weighs 8.31 pounds and 40 per cent cream 8.28 pounds to the gallon.

For all practical purposes the weight of milk testing from 3 to 5 per cent butter fat may be figured at 8.6 pounds per gallon.

Ask the Man Who Has Used It

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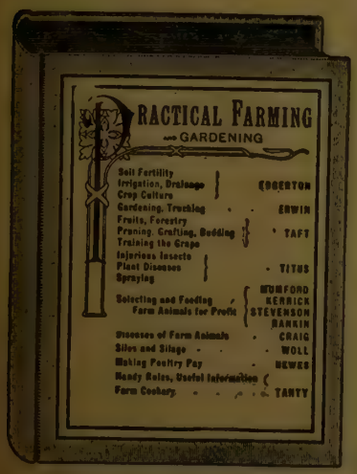

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Throughout the text of this great book, the reader is given the results of scientific research, coupled with successful experience, by use of only such expressions as can be readily understood by those who have not had a scientific training. Thus any farmer with ambition to make the most of his labor and realize the greatest returns for his investment will find in this volume a priceless guide for everyday reference.

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Control of Ear Ticks

Effective Remedy Is Discovered

EAR TICKS, blood-sucking parasites, which infest the ears of cattle, horses, sheep, dogs, and other animals, and cause heavy losses among the live stock in the semi-arid sections of the Southwestern States, can not be eradicated by dipping, but may be controlled, and losses may be prevented by injecting into the ears of infested animals a mixture of pine tar and cottonseed oil.

The New Discovery

Unlike the cattle fever tick, which attaches itself to the outside portions of cattle, the ear tick can not be eradicated or controlled by the ordinary methods of dipping. The remedy thoroughly tested by the Bureau of Animal Industry in field investigations consists of two parts by volume of ordinary commercial pine tar and one part by volume of cottonseed oil. This mixture is injected directly into the ears by means of a metal or hard rubber syringe.

Preparing for Treatment

In mixing the ingredients, the cottonseed oil should be added to the pine tar and stirred until a uniformly smooth mixture is obtained. In cold weather the pine tar and cottonseed oil should be warmed, so they will mix readily and flow freely, but they should not be heated more than is necessary. The mixture will remain uniform for a long time without separation or deterioration.

This preparation when properly applied kills the ticks but does not injure the animals. Cottonseed oil is a fairly good solvent for ear wax and the mixture penetrates ordinary loose masses of ear wax and ticks, but it will not penetrate the hard masses, to break up which the use of an ear probe made of baling wire is suggested. The prepartion recommended not only kills all ear ticks with which it comes in contact, but being of a sticky consistency remains in the ears and protects the animals against reinfestation for about thirty days.

Frequency of Treatment

Animals in the infested area should be examined at frequent intervals and treatment applied as often as necessary to protect them against discomfort and losses. Herds grazing on infested ranges should be treated late in the fall or early in the winter to prevent winter and spring losses to poorly nourished range cattle.

When animals are grossly infested and the ear canals are packed full of ticks, the parasites are easily visible, but when the infestation is light or moderate the ticks may be overlooked. The parasites usually attach themselves in the deep folds of the ear or crawl into the ear canal and follow it inward sometimes as far as the ear drum. Animals badly infested usually shake their heads and repeatedly turn them from side to side, meanwhile inverting first one ear and then the other.

Restraining the Animals

Most animals oppose the insertion of anything into their ears. The farmer who has only a few gentle farm animals to treat may tie them to a post or restrain them by other well-known methods, but in treating herds of wild range cattle or horses special equipment, such as dehorning chutes, branding chutes or other cattle chutes may be used.

Ear ticks are especially prevalent in the semi-arid sections of the Southwestern area of the United States. The infested areas, however, extend as far north as Nevada and Oregon. The climate in parts of Texas, Oklahoma, New Mexico, Arizona and California seems to favor their rapid multiplication.

Wonderful Results

No other word except "wonderful" will properly describe the success that has followed the planting of Armstrong strong-rooted Olive Trees in all of the olive districts of California. Just listen to what some of these enthusiastic planters have written us:

—from J. S. Douglas, in the Kern County District we get this: "30 acres of Olives planted last spring, not a single tree required for replanting."
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—from Tulare County, Ed Moore writes: "98% of the Olive Trees received from you last spring are growing nicely."
—L. L. Williams of Yolo County says: "Have planted 25 acres of Olives from your nursery; all doing fine."
—from the Orland-Oroville District, C. W. Butler writes: "Every tree good, no fault to find with them."

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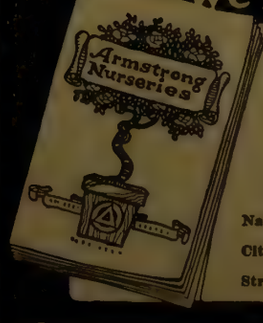

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Fur Facts for the Enterprising Rabbit Raiser

By Mrs. C. A. Richey

THE writer of this article has developed to a high degree the art of preparing rabbit skins and making the fur into articles of wearing apparel. She believes that as the number of wild fur-bearing animals decreases the rabbit fur industry will expand and assume tremendous importance.

Every rabbit fancier should know how properly to skin the animals, and to prepare and tan the pelts. This article tells why, when and how, and gives some interesting information not only about rabbit fur, but about fur rabbits.

MUCH interest is being shown at the present time in the so-called Cony or Fur Rabbit. As a matter of fact, however, nearly all rabbits have fur that can be, and is, used for making articles of apparel, such as wraps, trimmings and cloak linings. Automobile robes also can be made from such pelts as are strong enough to stand the handling and rough usage to which they are certain to be subjected.

To tan and match the fur and piece the places that are thin or torn requires a great deal of labor, but it is as interesting and fascinating as any other kind of fancy work with which women occupy so much of their time and far more remunerative.

Care of Skins

Success depends largely upon killing the rabbit at the correct time and giving the skins proper care. A rabbit that is of value for its pelt should be examined carefully to see if it has entirely recovered from the molt or period of shedding. In warm sections rabbits shed their hair more often than in colder climates, and of course, in the cold season of the year the coat will be much thicker and heavier than during the warm weather. If the days are warm the rabbits must be killed in the morning, as the cool night air in contrast seems to cause loosening of the hair. In killing the rabbit, care must be taken to keep the blood off the fur as much as possible, and not to tear or cut the pelt when using the knife.

The easiest way to skin a rabbit is to hang the hind legs on hooks, placed about four inches apart. Cut the skin carefully around the first joint, taking care not to cut the flesh, run the knife down the skin on the inside of the leg to the vent, cut across the vent, loosen carefully, and then strip off the pelt inside out. Cut the feet off at the first joint. They are of no value unless they are large, clean and fully furred. If they meet these requirements they can be dried and sold to make rouge puffs, especially those used by actors.

Treating the Pelts

The easiest way to care for a rabbit skin is to prepare some thin, smooth boards of the proper shape and of several different sizes and slip them into the pelts. Leave the fur inside, being careful not to stretch the skins too much. Then rub some cheap salt all over, taking care to reach into the folds and using plenty in the tail parts. It is there that the best fur is found, but it quickly rots if not well salted. After salting, place the skins on the boards in the shade to dry. If the shaped boards are not available, one can simply split the skin down the belly, stretch it, with fur inside, on a board, and tack the edges in place.

The Cleaning Process

Next the pelt must be carefully cleaned. This is one of the most difficult parts of tanning, for the outer or first skin must be removed along with the fat. If one can do this a few hours after salting it is much easier than after the skin drys. I use a blunt old knife or some other dull instrument. (An old chisel is good if it is wide and not sharp.) The skin can be lifted carefully and peeled off. By working from tail down to head and across from right to left, one can remove the flesh most easily.

After being cleaned, the pelt is ready for the tanning liquid or can be laid away where the moths cannot get at it until needed. Never dry the skins in the sun; it rots and spoils them.

Tanning the Pelts

Before putting the skins in the tanning liquid, one must soften them. This is done by placing them in lukewarm water. If the water is hard a little washing soda is added and the skins soon become pliable. If they are not clean, wash them with soap. Next, wring them out as dry as possible and then place in the tanning liquid.

If the fur is in good condition and you do not want to put the whole pelt in the bath, the skin can be softened by wrapping in a damp cloth. The tanning liquid may then be painted over it on the skin side, care being taken to get the liquid in all the creases. Then the edges should be folded in all around and after the skin has been doubled and rolled up tightly, it should be put aside for twenty-four to forty-eight hours and kept well moistened.

Some skins require more time to tan than others. Test the work by pulling a piece of the pelt over the finger; if it is white and soft the process is completed.

Wring the skins out of the bath and wash them again in lukewarm water. Then wring again and hang them up until partially dry. Then they must be manipulated; that is, pulled, shaken, rubbed, etc. until perfectly dry and as soft as a glove. The fur must be brushed and combed until it is fluffy and light.

Fox and Mink?
Guess again! Bunny and his brothers furnished the pelts from which these artistic sets were made. Where is the woman who would not wear them with pride and pleasure?

My Tanning Formula

Water .....one gallon
Salt .....one quart
Saltpetre .....two ounces
Sulphuric acid....½ ounce

Bring to the boiling point to dissolve the salt and add the sulphuric acid when the mixture has slightly cooled (luke warm). Use while warm.

Note—It is not necessary to use any alum unless one desires to "set" furs from which the hair is loosened and it scarcely pays to bother with a skin that is not in good condition. If, however, it is desired to use the alum, it should be mixed with salt, moistened with water, and left on the skin for a day or two before tanning. Then the skin is washed as above and placed in the tanning liquid.

Another Method

Another way to treat the skins after removing from the bath is to wash them, wring dry and lay them in gasoline for an hour. Then wring them out and cover with warm cornmeal or jeweler's sawdust, beating and working each skin with the hands over a piece of hard wood until it is dry and soft. It is not necessary to do this work all at one time. The pelts may be wrapped in a towel to keep them from drying out, and finished when convenient, but must not lie too long.

Breeds of Fur Rabbits

There are several kinds of rabbits that can be raised for their fur; solid colors or black and white only are preferred. Blacks are very seldom good unless dyed, and the dyeing process rots the pelt. In fact, that is the reason so many people denounce rabbit fur. Many purchasers have paid a big price for fur which they thought was genuine, only to find that in a short time it dropped to pieces because of having been dyed. Dyeing is usually necessary because so-called black rabbits are as a rule brown-black instead of blue-black. That is the trouble with the black Flemish, but there appears to be no doubt that in the course of time careful breeding will produce the desired blue-black fur. The Flemish rabbit has a remarkably heavy pelt, which could be used as leather, if the animals were not killed until mature. No rabbit is in its prime until it is twelve to fifteen months of age, and of course there are different qualities as with any other fur animals. Therefore the skins must be sorted and priced according to their value, some being worth much more than others.

The Himalaya

There are several varieties of rabbits whose fur is much in demand, the white breeds predominating. All white furs are much sought after and for these we have the Himalaya, a small, but very pretty animal which always breeds true, this fact indicating English and having long-haired collar and cuffs of either black or white fur. that it has been bred for many years. It is impossible to find where it really originated, but there must be some reason for its name. The pelts are small but of very fine quality and will always bring a fair price. These rabbits are in good fur at five months and as they are small can be sold as fryers at that age.

The English black and white is a larger breed, handsome, docile and healthy. We have them now with either long or short hair. The fur is thick and of good quality and it is possible to "breed off" the black spots, making a pure white fur, which, when properly prepared, matches the fox so perfectly that only an expert can recognize the difference. These furs, of course, bring the highest price.

A French Breed

The Champagne d'Argent or French Silver breed is much admired and the furs are very good for trimmings. The rabbits, however, must be carefully bred in order to produce the colors and shades which are in demand.

The Popular Angoras

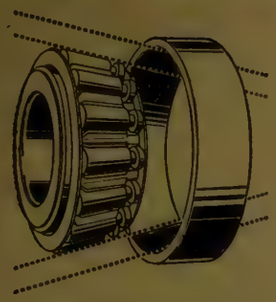
The Angora, while not exactly a fur animal, gives a pelt which makes up very prettily into collars and muffs for children and young girls. Baby carriage robes are very desirable when made from the white fur. Then we have the black and brown, which are used when a good quality and color are desired for adults' wraps.

The New Zealand Reds

The New Zealand Reds, when finely bred, make beautiful scarfs and wraps. The quality of the fur is excellent and the pelts are as soft as a kid glove; in fact, there is no doubt that kid gloves can be made from the skins of the younger animals. The pelts of the older rabbits are heavy but very pliable, and make a tanned product similar to chamois.

The pelts of the heavier breeds, such as the Flemish, are used at the present time to make vests, helmet linings and gloves for aviators. In the cold countries, moreover, overcoats lined with rabbit fur have proved to be a great boon to the poor man. No doubt rabbit skins will be even more generally used for coats and robes as the wild fur-brearing animals become more scarce. Certain it is that the possibilities are only beginning to be realized.

TIMKEN TAPER



Dotted lines show how the inside of the "cup" of a Timken Bearing is *tapered* to fit over the *tapered* rollers.

Bearings that Stay New in Tractor, Truck and Motor Car

The job of tractor bearings—in wheels and transmission, on the pinion or worm shaft, at the differential or in knuckle heads—is to keep the expensive working parts of the vehicle from wearing out. Bearings can't do this job if they *wear out themselves,* or even if they just *wear loose* and stay loose. Therefore, they should *stay* new—and Timken Tapered Bearings do.

The tapered design enables the bearing to resist not only up-and-down loads, bumps and shocks, but also the heavy *side or end-pressures* inevitable in tractor service.

Naturally, with this *doubled power of resistance* to wear and tear, Timken Bearings stand up where less sturdy bearings would be ground to pieces.

Secondly—If a little wear does occur after thousands of miles, it can be quickly and easily corrected, just by moving the tapered "cone" and rollers a trifle farther into the tapered cup. This simple "take-up for wear" extends the life of the bearings indefinitely.

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Canton, Ohio

EDITORIAL DEPARTMENT OF ORCHARD AND FARM

~ TIMELY TOPICS AMONG FARM FOLK ~

J.C. Knollin, Editor

Our Editorial Policy

Farmers First

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things; looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

The Farmer's Great Problem

THE farm labor problem will never be solved until both employer and employe receive a square deal. Considering the situation in its broad light, and not as represented by individual cases, this ideal condition has not yet been reached in any large section of the United States.

As a rule, neither the farmer nor his hired man receives a square deal. And frequently this situation cannot be traced to a fault of either. It is due rather to an economic condition capable of being remedied only by Government assistance and regulation.

True, there are certain avowedly super-democratic but really monopolistic interests that see in any attempt at Government regulation a "menace" which they are pleased to dub imperialism. But would it smack of imperialism if our Government, through its already highly-organized Department of Labor, could bring about concerted and well-timed movements of farm workers between the points of greatest demand?

Government Action Feasible

Would it denote monarchial tendencies if the Government should offer the laborers an opportunity to register voluntarily at any one of the public employment offices, with the privilege of traveling under the direction of the department, at half the usual fare?

Surely such a system, instead of contributing to the building up of an autocratic regime, would tend rather to stabilize the farm labor situation, and at the same time give the farmer the worth of the money he pays out for his help.

It would bring about the desired improvement, first, through making the laborer more satisfied with his work, and a satisfied laborer is usually a good worker. Without receiving higher wages, the farm laborer, if he could be assured of short periods of idleness, cheap transportation and a definite itinerary, could make and save money. It is the high cost of moving from one job to another and the long distances between short jobs, which have contributed more than anything else, perhaps, to the almost universal restlessness and dissatisfaction of agricultural workers. No employer, no matter how unfortunate have been his experiences with help, can fail to admit the justice of that contention. This situation is especially apparent in California, where there is a great diversity of crops in small sections of the State.

This fact, and the perishable nature of many of the crops, create what might be termed "high pressure areas" at certain seasons, when labor is urgently needed, in large numbers, for short periods of time. Frequently (and unfortunately, from the viewpoint of the laborer), the requirements of growers in different sections do not afford a chain of continuous jobs; the worker, therefore, must travel, and even high wages fail to offset the expense of long trips and idle days. Other classes of laborers have sought to solve their problems by organization, but the very nature of the farm worker's employment makes this step practically impossible. Considering first, then, only the laborer's side of the controversy, little light is cast upon his difficulties by any suggested medium other than Government supervision.

Peculiar California Conditions

The Department of Labor, through its complex organization and its co-operation with the Bureau of Markets and other Government branches, is in a position to make an almost exact survey of the situation in each State for a year in advance. The work has already been extended along these lines so far as is possible under existing regulations; that is, surveys have been made and the laborer apprised of the probable requirements in different sections. But beyond this, little has been done to assist him. Consequently he has very little to say in favor of public employment offices. If, however, in addition to being informed of the needs of the farmers, the laborer could be moved under Government supervision at reduced fares, he would feel that he was really receiving tangible assistance; this would be especially true if he could, in company with a stated number of companions, enjoy the accommodations of a well-managed camp or be assured in advance of a clean, comfortable bed and good "grub," all too frequently conspicuous by their absence.

Not alone the laborer would be benefited, however. Such conditions as Government regulation could and would bring about would undoubtedly react almost immediately for the benefit of the farmer-employer. For not only are satisfied, money-making men certain to deliver more work for their wages, but the men who could be expected voluntarily to register for such service would undoubtedly represent the best element among our agricultural workers; that is, those most far-sighted and ambitious. Fortunate, indeed, would be the farmer who could rest assured, in advance of his harvest, that such a class of laborers would be on the ground at the time when they were needed.

Benefits Would Be Mutual

But that is not the only manner in which the employer would be benefited. Wages could be lowered and stabilized and still the laborer could make more money than when he worked at varying and higher wages under less favorable conditions. The producer's labor expense would, therefore, be reduced, his losses from ill-timed harvests and shortage of help practically eliminated, and his mind relieved of one of the greatest burdens. Instead of dealing with a large number of strange and irresponsible individuals, moreover, he could take up his requirements directly with an official Government office, and through his co-operative organizations could estimate and time his employment of labor in such a manner as to bring about the greatest good to his entire community.

Such a system would, in fact, have a tendency to strengthen and encourage the highly desirable movement for farm organization and co-operation which is sweeping rural America.

The opponents of Government interference (who, strangely, are to be found among the monopolists rather than among the laborers) offer, as evidence that the farm labor problem is capable of self-solution, the magnificent attainments of our food-producers during the troubled period through which we have been passing. "See what they have done in the face of unexampled difficulties," they cry. "When conditions are restored to normal everything will be all right."

But everything will not be all right

(Continued on Page 17)

A Tractor Tragedy

THERE was a twinkle in Uncle Wiseacre's eye as he took his accustomed chair beside the stove at Jud Whitson's store on Saturday evening and greeted those members of the clan who had already assembled.

"Josh Henderson's all broke up," he announced, chuckling, as he carefuly sliced a chunk of the desired size from the plug which he drew from his overall pocket. "All broke up, an' don't know whether he's standin' on his head ner his feet. I met up with him this afternoon, an' of all the discouraged fellers ye ever hear tell of, Josh was the worst.

"Ye see, th' county agent an' Josh's boys persuaded him last year t' buy a tractor, an' now th' pore feller is about ready to call quits. Havin' plugged along at a speed of about four knots an hour most of his life, he kain't endure much longer th' strain o' keepin' up with that iron hoss. It has upsot all his plans an' pre-seed-ents!

"'Seems like thet tractor was the commencement of all my troubles,' Josh says t' me t'day. An' then he went on t' show that he had got all his land plowed early an' deep an' raised twice th' grain he ever did before, an' had t' hire extra help t' handle it an' buy two steel storage bins t' hold it. Then right on top o' that he took th' machine out on th' highway an' made some extra money helpin' a contractor.

Then he still had a lot o' time, so him an' his sons cleared four acres of land thet had laid idle fer twenty years, pulling stumps an' plowin' with th' tractor, and he sold the land to a neighbor fer $175 an acre. But thet wasn't the end of his troubles. During th' winter th' boys persuaded him to get a power saw, an' they cut up 200 cords of word from their woodlot an' sold it durin' th' coal shortage fer a big figger. Then o' course th' boys would have him build a silo (pointin' out that they had a lot o' cash on hand), an' this summer they bought a ensilage cutter an' filled the silo, an' are feedin' th' stuff t' their cows. Now Josh is worryin' because, he says, th' cows is givin' a lot more milk an' he had t' buy some more cans an' hire another milker.

"Yes, sir, fellers, when he left me, his hand was shakin' an' his eyes was wild. 'Good Lord,' he says, 'jest because I have saved up a little cash, the boys is after me now t' pay off th' mortgage an' buy a truck t' deliver milk an' haul feed. I kain't stand th' strain of this awful expense much longer.'"

Uncle Wiseacre paused in the midst of his account to regain his breath, after a choking fit of laughter. "Yes, sir," he finally concluded, "poor ol' Josh was drug out o' his rut by a growlin', snortin' engine on wheels, an' th' shock like to a-killed him. So let this be a lesson to ye all. If yer nerves can't stand prosperity, expansion an' speed, don't, fer heaven's sake, don't buy a tractor."

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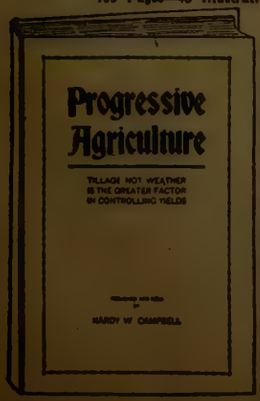

THIS book contains 19 chapters, each dealing with specific factors of vital importance in all crop-growing questions. The New Tillage idea clearers the certainty of successful farming, not only in dry seasons, but any and all years. Timely tillage will control yields in spite of droughty seasons.

This wonderful book is being offered, including a three years' subscription to ORCHARD AND FARM, for one dollar and twenty-five cents. Mail your order today to the address below and the book will be mailed postpaid by return mail. This offer applies to both old and new subscribers.

ORCHARD AND FARM,
LOS ANGELES, CALIFORNIA.

Difficulties Not Momentary

The situation has never shown improvement; it has grown worse from year to year. The American farmer has indeed during the war astonished himself and the entire world by his attainments under the strain of the most discouraging labor conditions he has ever encountered. No doubt many readers of Orchard and Farm are wondering at this moment how they ever accomplished their work and marketed their produce during the duration of the war. Many of them, in fact, are undoubtedly facing the coming season with no little apprehension and doubt.

No, our agricultural labor troubles are not traceable to the war; they were merely intensified by it. How long is this condition to be tolerated? When are we going to get at the root of the trouble and relieve the food-producer of this, his greatest burden?

This editorial is not intended as a eulogy to the American farm laborer, nor as a one-sided presentation of his cause. No one realizes more than we the insolence, slipshod work, misrepresentation, dishonesty, anarchy, if you please, which not only Pacific Coast farmers, but those of other States, have had to endure from many of the workers to whom they have paid exorbitant wages during the past few years.

"The more we do for them, the less they appreciate it," is the assertion of one rancher, who employs large numbers of men; his experiences justify his statement, and his feeling is shared, with good reason, by countless other farmers.

The Employer's Side

But these facts, far from pointing to a condition impossible of correction, merely emphasize the assertion that the real, basic fault frequently lies with both employer and employe; frequently, with neither. Such a situation calls for outside interference and assistance. Who is better qualified or equipped to be the mediator, placater, judge, jury and administrator for both sides than our own honorable, just and disinterested Uncle Sam?

Fair Play

It is expected that national prohibition will greatly increase the demand for milk. In Detroit, since last May when the city became dry, the consumption of milk has increased 20 per cent and of buttermilk 50 per cent, according to the secretary of the Michigan Milk Producers' Association. We are continually reminded of the tremendous importance of the products of the dairy, but how about a little assistance in securing feed for the dairymen at reasonable prices, and a guarantee of a price for their products which will permit of their staying in the business? Could not something be done along this line, at the same time satisfying the consumer that he is not being robbed?

The FRUIT GROWER says=

"for tree planting genuine GIANT is most satisfactory"

The Giant Farm Powders—Eureka Stumping and Giant Stumping—loosen and pulverize the soil instead of packing it and throwing it high in the air.

Western fruit growers have used hundreds of tons of these Giant Powders for blasting beds for trees. They have proved that blasting with genuine Giant Powders provides free drainage, increases moisture-storage capacity and insures vigorous growth and early bearing.

"My trees planted three years ago in beds blasted with Giant Powder are 75 to 100 per cent bigger and better than the trees that I planted in dug holes," writes H. H. Smith, Oregon City.

You will enjoy reading "Better Farming with Giant Farm Powders." It describes all the new and money-saving methods of blasting beds for trees, subsoiling established groves and orchards, clearing land, ditching, etc. Write for it now.

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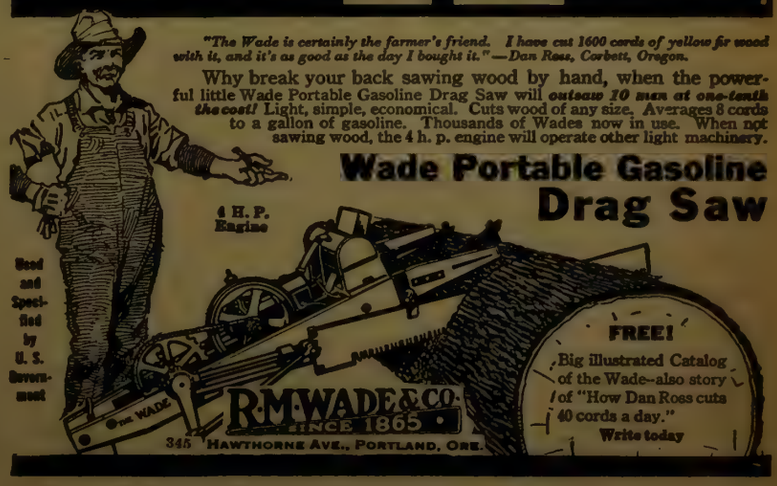
GIANT
STUMPING FARM POWDERS EUREKA

"My WADE Saws Four Cords an Hour"



"The Wade is certainly the farmer's friend. I have cut 1600 cords of yellow fir wood with it, and it's as good as the day I bought it."—Dan Ross, Corbett, Oregon.

Why break your back sawing wood by hand, when the powerful little Wade Portable Gasoline Drag Saw will *outsaw 10 men at one-tenth the cost!* Light, simple, economical. Cuts wood of any size. Averages 8 cords to a gallon of gasoline. Thousands of Wades now in use. When not sawing wood, the 4 h. p. engine will operate other light machinery.

Wade Portable Gasoline Drag Saw

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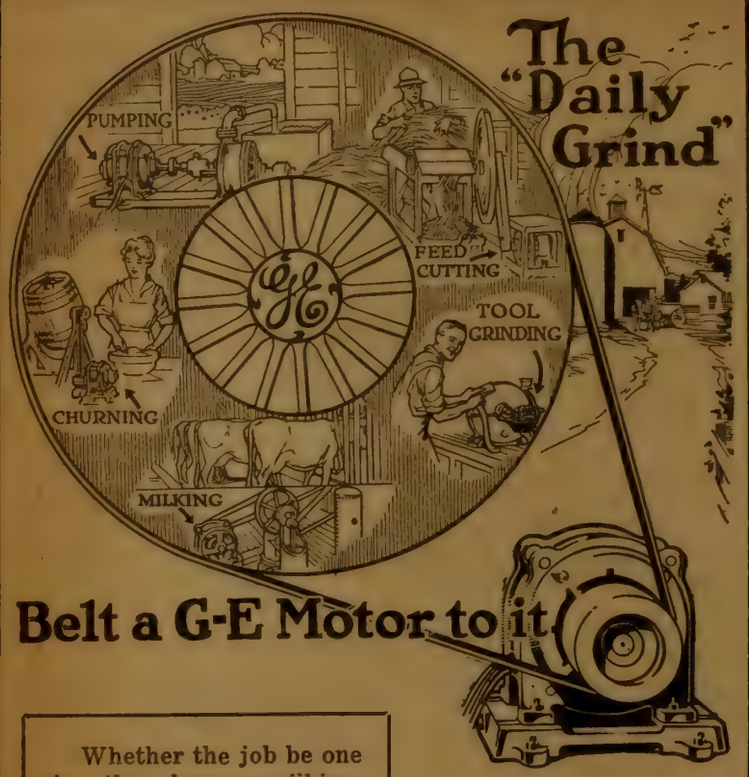

Belt a G-E Motor to it

Whether the job be one in the barn — milking, cutting the day's feed, pumping the water—or in the dairy—separating or churning — or wherever chores are everlastingly waiting to be done, there is a G-E Farm Motor that will do the work better and quicker. The labor released soon pays for the motor equipment.

Your near-by Central Station or General Electric Agency will gladly help you.

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Easy Ditching

THE "good old days" of a pick and shovel have become memories. Instead of spending a week on a mile of ditch, Mr. Farmer now completes the job in a few hours. He does a better job, too—and saves a BIG LOT of *valuable* time. He does it with

THE Martin

DITCHER, Grader and Terracer

Makes new ditches; cleans old ones; grades roads; builds dykes and terraces. Cuts alfalfa, Bermuda grass or sweet clover roots from ditch banks, without plowing. Does more work and better work than 100 men with old methods.

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SYSTEM IN SHOP, OFFICE and FIELD

Lightening the Chores

THE average farmer, in considering the installation of an electrical plant, thinks principally of effect on the household and the manifold benefits that his wife will receive through having electric lights, as well as power for washing, sewing, churning and similar work. There is, however, another side to the question; one which the prospective purchaser of a power plant may well consider in a selfish light, for electricity can do much to lighten the chores. And as everyone who lives on a ranch knows, it is the chores which are the most irksome part of the day's work.

Instead of stumbling about the buildings and yards with a smoky, dangerous lantern in the winter evenings, the fortunate owner of a generating plant will probably extend the wiring to his outbuildings and have safe light on tap at the turn of a switch. He can also employ a small electric motor to save hundreds of steps and hundreds of hours of valuable time. It will run his pump, grindstone, fanning mill, feed grinder, clippers and other small machinery. Electricity is the cleanest and surest power for such work. The modern self-contained home generating plants may be procured in units capable of supplying considerable power as well as light. Thousands are in use on ranches not enjoying power connections or not having the privilege of using the "power-juice" for domestic purposes.

For a Mean Mare

A wire muzzle, such as is frequently employed to prevent damage by horses to a crop in which they are working, will often prove a great help in overcoming the quarrelsome disposition of a mare.

It is the misfortune of the writer to work a rather playful horse with a mare, which, though gentle enough in other ways, seems to detest the company of every other horse. The more friendly the team-mate, the more apparent her disposition to bite and kick.

The kicking was brought under control without special trouble by means of whip and voice, but the snapping and bickering, particularly at the turns, became a serious nuisance. The mare was frequently so interested, while turning, in biting at the horse, and the horse, in holding up his side of the quarrel or getting out of the way, that neither could deliver efficient service.

In wrath and desperation I finally thought of the wire muzzle and have been using it in all field work. Now the mare seems to understand that if she commences a row she will be in the position of a man fighting with his hand tied behind his back, therefore she no longer snaps at her teammate, except occasionally, when her nature dominates for a moment.

Meanwhile the horse, which has a decent disposition, is perfectly satisfied to go along without any disturbance, attending strictly to his own business and seemingly relieved by not having to defend himself. In comparison with former days, everything seems calm and peaceful.

Although one successful experience does not prove applicable to every case, anyone who works a high-strung mare by the side of a horse (and that practice is a fruitful source of trouble) can very well try a muzzle on the animal that tries to be boss.—Tulare Farmer.

Filling Squirrel Holes

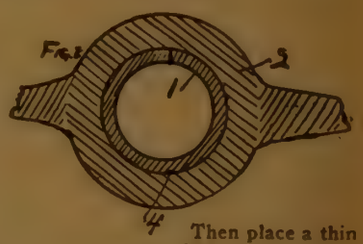
After one checks up and starts alfalfa on land where squirrels have been large holes are likely soon to develop. The loose dirt settles, the water washes the soil down into abandoned squirrel holes, and it is frequently a big job to fill up these places. A common method is laboriously to shovel a lot of dirt onto a wagon, then to drive around and shovel the dirt onto the ground again, filling up the holes.

If loose dirt is available near the alfalfa field, however, considerable time and much labor can frequently be saved by using a Fresno scraper, gathering a small scraperful and dragging it from one hole to another. It may be emptied with a shovel, not dumped as in leveling. A fair scraper load is gathered up in a quarter of a minute and it will go about as far in filling up holes as the load of dirt a man ordinarily would put on a farm wagon. Moreover, it can be applied to the holes a good deal more quickly than dirt from the floor of a wagon, making a saving in time and work on both ends of the deal.—Tulare Farmer.

To Tighten Bearings

Here is a simple method of tightening tube bearings on farm machinery:

Remove the tube (1) from the casing (2) as shown in Figure 1. Saw the tube open with a hack saw as shown by (3) in Figure 2.



Then place a thin sheet of copper or tin between bearing and casing on the worn side (4) in Figure 1. This should reach from the worn place on one side to that on the other. The insertion of the metal will close the saw cut and tighten the bearing.—L. Beckham.

Self-Feeder Pays

One of the farm bureaus has just completed a profitable self-feeder demonstration for hogs.

Ten pigs from one litter were fed skimmed milk and allowed to eat at will from a self-feeder containing brans, shipstuff and hominy meal. The pigs were farrowed March 1 and sold on October 22. They made an average daily gain, from date of birth, of 0.93 pound.

The total cost of feed was $200. The weight of the hogs at selling time was 2100 pounds, or an average of 216 pounds each. The farmer received $18.50 a hundred, $399.60 for the lot, making a net profit of $199.60, or $19.96 per head.

Fighting Rabbits

In order to prevent barking of trees by rabbits, J. G. Grindel, an Oakdale (Cal.) subscriber, paints the bases of trees with the blood of a freshly killed rabbit, or rubs the tree with the carcass. He says his plan has proved to be very effective.

Pumping Water Without Power

Fortunate is the farmer who possesses a spring or stream of sufficient volume to operate a ram. In response to the inquiry of a subscriber as to "how it works," we publish the accompanying explanation:

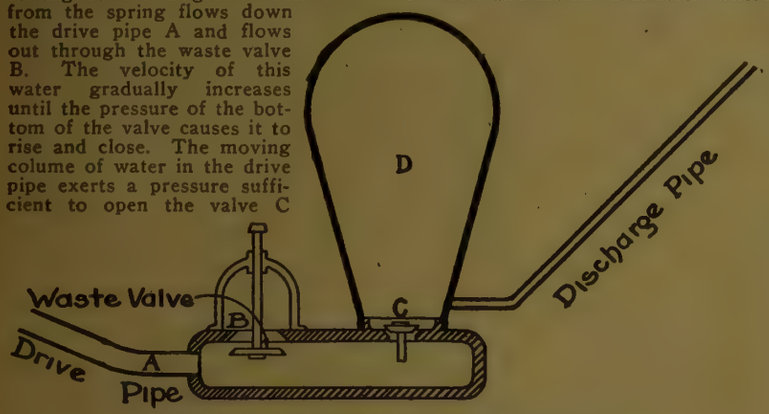
WHERE a spring or a small stream is used as a source of water the hydraulic ram offers a cheap, simple and efficient device for pumping the water. The advantages of the ram are: (1) It works continuously without attention. (2) Its first cost is low and it lasts for many years with very little expense for repairs. (3) It will force water to a great height and through a long pipe.

The hydraulic ram uses the momentum of falling water to force a small portion of that water to a greater height. The method of operation may be understood by referring to the diagram. The water from the spring flows down the drive pipe A and flows out through the waste valve B. The velocity of this water gradually increases until the pressure of the bottom of the valve causes it to rise and close. The moving colume of water in the drive pipe exerts a pressure sufficient to open the valve C into the air chamber. The air in this chamber is compressed until the energy of the moving column of water in the drive pipe has spent itself and the water comes to a stop.

At this instant the pressure on the bottom of the valve B is decreased sufficiently to allow it to drop down and the water to start flowing through it again. Flow past the waste valve will continue until there is sufficient force to close the valve, then the previously described action is repeated. A small amount of water is forced into the chamber D and thence through the discharge pipe to the storage tank, while the remainder of the water escapes through the valve B and is wasted.

The spring or stream is usually walled in to protect it and to insure that the water will run into the supply pipe. The ram is set down in a pit, preferably of concrete, where it can be covered and protected from frost.

When a ram is to be installed, the first thing to consider is the supply of water and the fall available. There should be at least two gallons per minute flow and a fall of eighteen inches from the spring to the ram. A larger flow of water and a greater fall simply mean that more water can be elevated to a greater height. A spring or stream which will furnish four gallons per minute will usually be found sufficient for ordinary farm house uses. It is common to find a ram in which from one-tenth to one-fifth of the water is delivered.



Like Raising Oneself by One's Boot-straps

Is the utilization of falling water to elevate itself. The hydraulic ram is one of the simplest pieces of machinery known. There is practically nothing to get out of order.

Alfalfa in Orchards

Following the publication, in our January issue, of Mr. Hodgson's article on growing alfalfa in the orchard, we received a letter from Chas. W. Kolb, a Madera, California, subscriber, who inquired whether difficulty would not be experienced in raking up and handling the hay between the trees. Here is Mr. Hodgson's reply to Mr. Kolb:

I do not believe you will find the difficulty which you anticipate in handling the hay in the orchard. In the first place, it is inadvisable to plant alfalfa too close to the trees for the reason that the shade of the tree prevents it from growing well and in addition, it has not been found satisfactory to grow the alfalfa too close to the trunks.

Usually a bare spot, either in the shape of a square or circle some 6 or 8 feet across, is left about each tree. This makes it fairly easy to rake up the hay, as the rake does not need to extend very close up under the tree.

Of course it is not possible in the orchard to do a very clean job of raking, and in some cases, especially where the alfalfa is planted two ways, a certain amount of hand work is necessary. With many orchardists, however, it is felt that the amount of hay which is left is not sufficient to pay for the hand work involved in gathering it up and it is allowed to lie, serving as a mulch to conserve moisture. It ultimately rots and adds fertilizer.

I can refer you to Dr. C. Evans of Valyermo, A. B. Humphreys of Escalon and Dr. C. W. Kellogg of Bakersfield, who are growing alfalfa in their orchards and making hay. I believe they would be glad to discuss with you this matter of raking it up.—Robert W. Hodgson.

Poisoning Rats

Spread a piece of bread with lard or bacon fat. Cut in squares and on each square put a quantity of powdered strychnine, equal in bulk to a wheatberry. Rub the poison into the lard and cover thickly with common brown sugar. Place in a spot convenient to the rat runs, but out of reach of children and domestic animals. We have used this bait for ten years with good success. Each time a fresh army of rats invaded our place, the enemy has been quickly destroyed.—Samuel Haigh, San Jose, Cal.

I have discovered that a practical method of removing paint from window-glass is to scrape the panes with a discarded safety-razor blade. The blade is so fine and sharp, with such a smooth edge, that it does not scratch the glass as a knife does, and it seems to "get under" the paint more easily than any other instrument. The safety blade is also useful for ripping the seams of garments.—Mrs. Riley Gearhead, Yuba City, Cal.

Get going right with a jimmy pipe!

You'll have a streak of smokeluck that'll put a lot of happiness in your life if you'll start in with a jimmy pipe or makin's cigarettes and some Prince Albert tobacco.

You never will get real top notch smoke enjoyment until you can call a pipe your pal, *then*, to get pipe pleasure at its best you land square on that two-fisted-man-tobacco, Prince Albert!

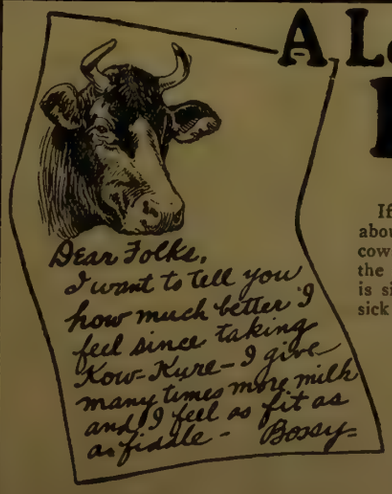
Quality makes Prince Albert so different, so appealing all along the smoke line. Men who never before could smoke a pipe and men who've smoked pipes for years all testify to the delight it hands out! P. A. meets the universal taste. *That's why it's the national joy smoke!* And, it can't bite or parch. Both are cut out by our exclusive patented process!

Right now it's time to turn over a new leaf. You take a tip and get out your old jimmy pipe or the papers and land on some P. A. *for what ails your particular smokeappetite!*

You buy Prince Albert everywhere tobacco is sold. Toppy red bags, tidy red tins, handsome pound and half-pound tin humidors—and—that classy, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

A Letter from Bossy



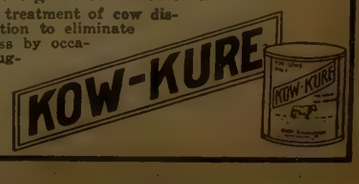
If a cow could speak she would talk about her health as people do—because cows suffer from ailments, little and big, the same as human beings. When a cow is sick, she needs medicine as much as a sick person does.

Mere rationing will not eliminate disease; medicinal treatment is necessary. The most common cow ailments, such as Abortion, Retained Afterbirth, Lost Appetite, Bunches, Scours, etc., result from a diseased condition of the digestive or genital organs. Any of these diseases and many others can be successfully treated or prevented by using Kow-Kure, the great cow medicine.

Kow-Kure is scientifically prepared for the treatment of cow diseases only. It puts the vital organs in condition to eliminate disease and function regularly. Prevent sickness by occasionally using Kow-Kure. Feed dealers and druggists sell it—60c. and $1.20 packages.

Free book, "THE HOME COW DOCTOR," sent on request.

Dairy Association Co., Lyndonville, Vermont



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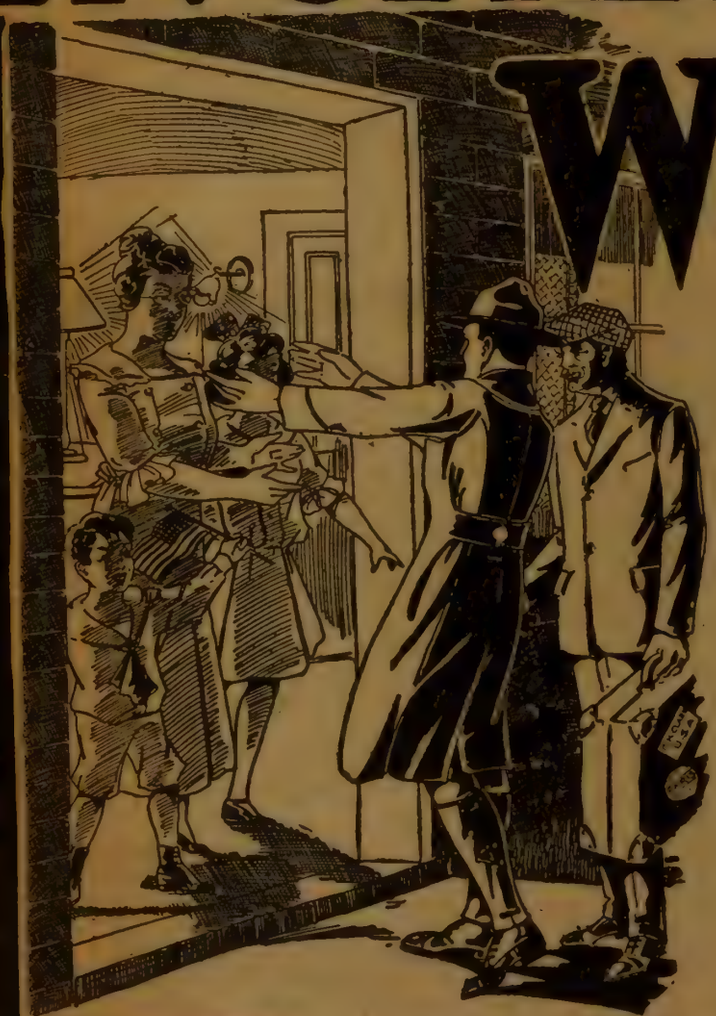


When the Boys

Give the returning soldier and sailor boys the brightest, che iest welcome of their lives.

Make it a real surprise.

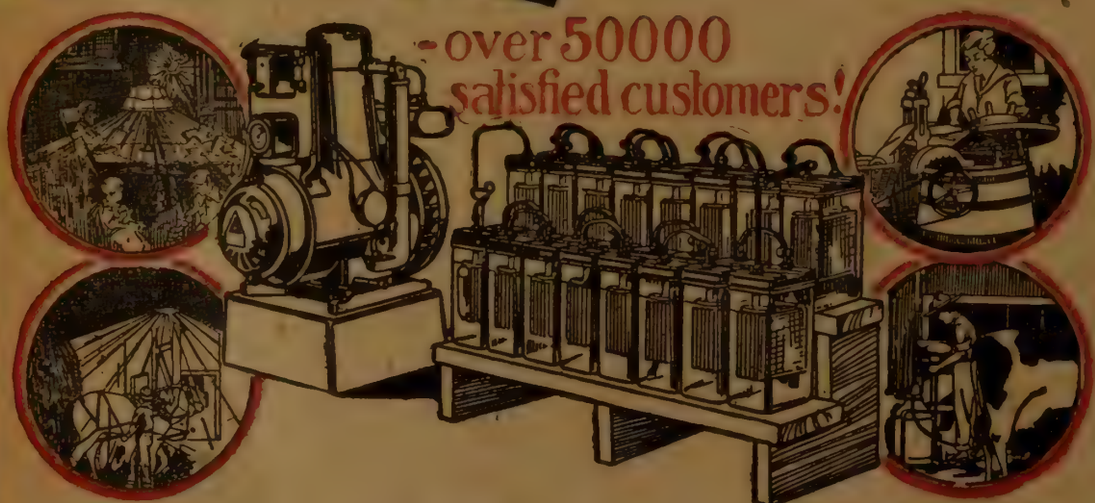
Turn the house into a flood of warm, inviting light for those l who have faced the submarine's perils and then crossed No Ma Land to war's lurid illumination of star shell and rocket.

DELCO-LIGHT will do it.

Remember, there has been a mighty change in those boys si they left home. The big, broad, modern world has opened them.

From the day they passed out the front gate to the day t brought the war to a victorious end their lives have been influenc by modern machinery—by man's most wonderful inventions.

Electricity has played a mighty part at every turn. It has spo through wireless, it has moved trains, made the modern battles possible, has helped to fly aeroplanes, and even in the front l trenches it has provided light, heat and conveniences undreamed when fathers and grandfathers fought at Antietam and Gettysbu



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WATER SYSTEM

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"Operates deep-well pump, electric iron, etc., with perfect satisfaction and little expense. Would give up my automobile before I would my Delco-Light plant.

(Signed) "JOSEPH BLACK,
"Illicrest Orchards,
"Oroville, California."

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LIGHT

RM PROFITS!

Come Home--

These returning boys need DELCO-LIGHT and its appliances. They want to see the farm made modern, efficient. They know that modern labor-saving machinery on the farm means greater profits, more time for recreation, more joy to life.

And they want to see mother and the girls get away from the old-time drudgery.

Don't disappoint them!

Make DELCO-LIGHT your gift to the new generation—the new era. Be among the 65,000 and more satisfied, gratified farm users of DELCO-LIGHT.

Quick, now—send in the Coupon for the DELCO-LIGHT book! If you don't do another thing today get that coupon in the mail.

Keep those returning boys on the farm; give yourself more time to plan, to think, to make money from the place. Let a DELCO-LIGHT and power plant do the hard work that never was meant for man.

The coupon points the way for that royal welcome. Don't put off—don't delay. Fill it in and mail it NOW.

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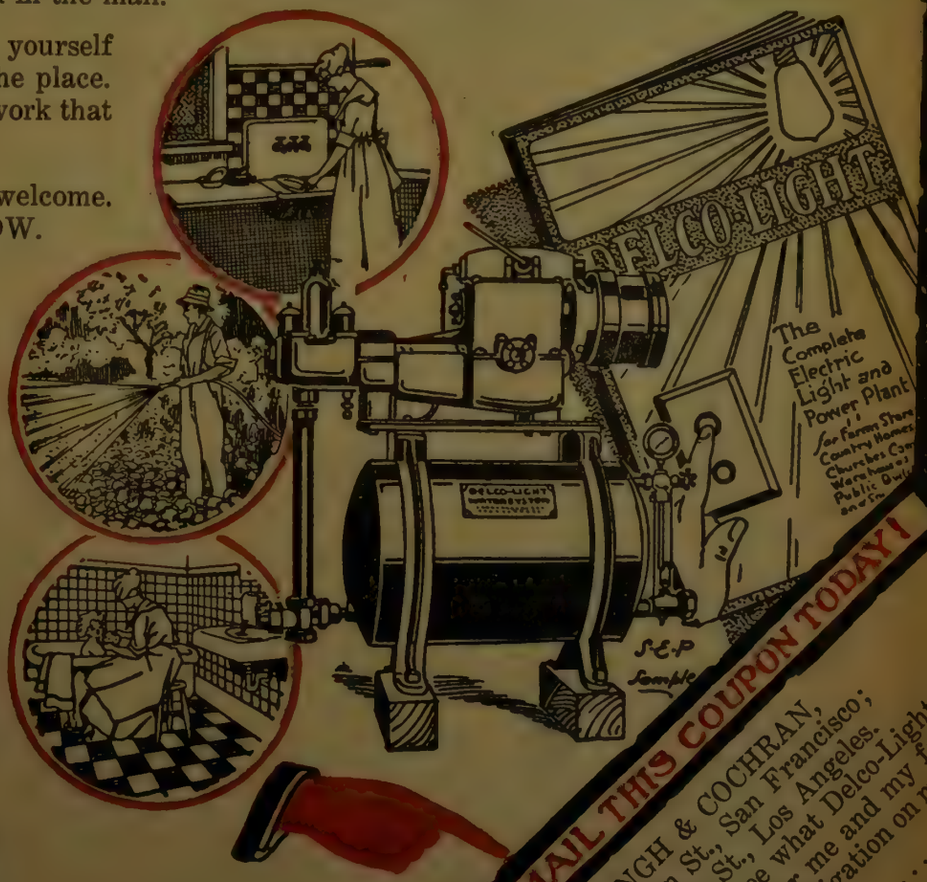

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had one of your Delco-Light d in our home for more than want to say that it has proven factory in every respect. Gives ht and operates our flat iron, operating has never exceeded h.
ery than satisfied with Delco- said recommend it to anyone rfect lighting system.
(Signed) "A. F. KLINT,
"Turlock, California."

"Our Delco-Light plant is running in fine shape. We are very much pleased with it. The lights are steady and bright.
"Any rancher who wants to live in comfort in his home and with perfect safety from fire about the house, barns and outbuildings should have Delco-Light, and the lady of the house should have a flat iron. It works fine and the cost to run is very small.
(Signed) "E. W. SLYGH,
"Armada, California."

CHRAN

29 East 6th Street, Los Angeles

SIGN AND MAIL THIS COUPON TODAY!

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606 Mission St., San Francisco;
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I want the Booklet to see what Delco-Light and Water System can do for me and my family.
Please send it without obligation on my part.
Name.....
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Orchard-Vineyard Work
THIS TRACTOR'S SPECIALTY
Reasons in TrackPULL Book

MOST makers make a general-use tractor. We make a **special kind**, after 34 years' experience in building orchard and vineyard machinery to meet special needs.

The Bean TrackPULL Tractor will be as famous as the noted Bean Power Sprayer when as many are in use.

Don't buy merely "a tractor" until you know the TrackPULL's special orchard and vineyard features. When you learn all the facts you'll decide

at once that a "general-purpose tractor" will not do.

BEAN TrackPULL Tractor

The TrackPULL turns in a 10-foot circle with full power — tools deep in the soil. You turn back in the same row. No getting out. No stopping.

Its low height gets under branches four feet off ground.

Makes no difference how far off-center tools are hitched.

New "After-the-War" Proposition

We have a new "After-the-War" proposition which includes a bond covering a liberal guarantee on one season's work of 90 days, without expense for repair parts. This guarantee bond is furnished each purchaser of a BEAN. A reduction in price is also effective at once, and guaranteed up until June 30, 1919.

Also manufacturers of famous Bean Power Sprayers

See this Tractor at either of our Branch Houses 184 N. Los Angeles Street Los Angeles, Cal., or Fresno, Cal.

Bean Spray Pump Co. 264 W. Julian St., San Jose, Cal.

Send me TrackPULL catalog and full information without obligation on my part.

Name_____

Street_____

City_____

County_____ State_____

No. of Acres_____ Kind of Crops Grown_____

What Buyers Say of Standard Well-Boring Outfits

Jos. A. Schmitt, Highwood, Conn.
I dug a well for myself with your standard Well Boring Outfit and had fine luck with it.

Avery H. Reed, Marion, Ky.
I have used your outfit and found it very satisfactory, and you may use my name as reference.

N. D. Mitchell, Akron, Ohio
I am on my 47th well and am more than pleased with your Standard Well-Boring outfit.

T. J. BOOM, Hale, Mo.
It was my lucky day when I bought one of your Well Boring Outfits. I am more than pleased with it.

L. B. Denham, Pauls Valley, Okla.
Your Outfit does more than you claim for it. With one helper I bored well 52 feet and eased it up in a day.

R. M. GRANT, Mineral Wells, W. V.
Bored a 58-foot well 10" in diameter, cutting through 6" of hard pan and red clay, sand and quicksand.

J. M. Archulets, Jr., Edith, Colo.
Outfit I ordered has given such satisfaction, that my neighbor decided to get one.

CHAS. W. GANDY, Springhill, La.
The Well Boring Outfit you sold me was certainly a success. It met every demand and I am more than willing to endorse every claim you make for it. I have bored several wells with great satisfaction, so you can make your testimony as strong as you wish.

Water

WHERE and WHEN you want it the year 'round. For house, barn, field, any place. BORE YOUR OWN WELL with our time-tested

Standard Well-Boring Outfit

Easily operated by hand. Bores wells 8 to 16 in. dia., up to 100 ft. deep. One man bored 48-ft. well in 5 hours. Another bored 5 wells averaging 75 ft. each and wrote "its a humdinger."

BORES 100 ft. WELLS by hand

Thousands used during war by U. S. and English Governments.

ONE DAY'S WORK PAYS FOR OUTFIT

Easy to get 50 cents to $2 per ft. —make $20 to $30 per day boring wells for neighbors. One man bored 47 wells — another 75 and another bored 35. Satisfied users in 46 states. Every claim *guaranteed* and *proved*. Write now, TODAY, for full information.

The Specialty Device Co.
106 W. 3rd St., Cincinnati, O.
Dept. 111

W. W. TATRO, Robbinsdale, Minn.
The No. 2 outfit which I purchased from you has made two wells for me besides three for my neighbors, the average depth being 75 feet through clay, loam, blue clay with cobble stones besides 6 feet of hard pan, the toughest kind of soil. I wish you every success.

E. C. Robertson, Aldine, Texas
I can bore wells with your outfit and do the work better than with any other machine I have seen.

F. M. Peterson, Eureka City, Utah
I am well pleased with your Well Boring Outfit, as it is all you recommend it to be and more.

Jos. E. S. James, Lawnside, N. J.
My Well-Boring outfit works fine. Everybody thinks it is the most wonderful thing they have seen.

EDWIN KELLER, Valmont, N. M.
I bought one of your Standard Well Boring Outfits 8 years ago and have bored 25 thousand feet and like it fine.

Robert Rode, Hayward, Calif.
My neighbors were surprised at the hard clay I bored through with your Standard Well Boring outfit.

C. A. Sawtelle, Sacramento, Cal.
Your Outfit has been worth to me just $119. I would not sell it, if no other could be had, for $100.00.

Wm. E. Chandler, Gambrills, Md.
I have used your Outfit to bore a well at my home. Work was entirely satisfactory.

We Can Send You Many Such Letters

Predicts Poultry Prosperity

This optimistic forecast by H. W. Sanborn, U. S. D. A. poultry expert, should lend encouragement to every poultryman to expand his business, enlarge his flocks and prepare for an era of strong demand and good profits. After the discouraging conditions faced by egg-producers during the past two years, such improved prospects are certain to lend a great stimulus to the industry, even though there is no immediate reduction of feed prices.

NOW is the beginning of the best five-year period of profitable egg-production ever known. We believe it will be the best five years that will ever be known.

All Europe has very little poultry. Some parts none at all. All Europe will become a bidder in American markets for poultry and eggs. American breeders must furnish the breeding stock for the renewal of the European flocks, and it will take at least five years before Europe can be self-sustaining in poultry products.

These facts make for continued high prices of poultry and poultry products, even after prices of grains have declined.

Marketing Grain Most Profitably

This means that farmers will be able to realize for the next five years more for the grains fed to hens for egg production than will be possible by any other process of marketing. We feel confident that by following proper practices in poultry keeping at all seasons of the year double the market value of grains may be realized by the feeding of it to hens for egg production.

A Well-Stocked Poultry Farm

Is a good asset with which to begin the new year, according to those who have made a study of conditions surrounding the poultry industry. Is there a more pleasing sight than a healthy, active flock of birds, all of one breed, well cared for, and surrounded by up-to-date equipment?

A Message to General Farmers

Begin now—this season—to make your poultry work count. Give it a definite place in the daily work; keep accounts and compare returns for effort expended with other farm operations. If this is done results will be more evident and you will appreciate your poultry as revenue producers.

Here Are Some Good Rules

Practice right selection in breeding.
Provide proper housing conditions.
Feed liberally rich foods to obtain high egg yield.
Hatch early. Early hatched pullets lay fall and winter eggs.
Practice good sanitation.
Keep hens free from lice and roosts free of mites.

Care of the Eggs Important

Keep the nests clean; provide one nest for every four hens.
Gather the eggs twice daily.
Keep the eggs in a cool, dry room or cellar.
Market the eggs at least twice a week.

The hen lays a perfect egg. See to it that a perfect egg goes to market. Good eggs bring top prices.

Sell, kill, or confine all male birds as soon as the hatching season is over, so as to produce infertile eggs. The male bird has no effect on the number of eggs produced.

What Does Early Hatching Mean?

REMEMBER that early hatching means chicks that are past the danger point before the hot weather sets in, and chicks less troubled by lice and disease; it means more chicks raised.

Early hatching means a longer growing season.

Early hatching means better grown chicks.

Early hatching means higher prices for the surplus cockerels marketed as broilers.

Early hatching means well matured pullets which begin to lay in the fall.

Early hatching means eggs from the pullets while the hens are molting.

Early hatching means eggs in the fall and winter when prices are highest.

Early hatching means early maturing pullets that become broody earlier the following spring.

Early hatching means greater profit.

Soft-shelled eggs are often caused by the fowls being confined or becoming overfat, and from lack of mineral matter.

The free use of kerosene or crude petroleum on the roosts and in the cracks will exterminate mites.

Purebred poultry means uniformity of products. Uniformity of products means increased profits, if products are properly marketed.

Given the same care and feed, purebred fowls make a greater profit than mongrels.

How to Care for Baby Chicks

Every egg hatched is an egg removed from the food market; every chick that dies represents, therefore, not only a waste of money and feed, but interference with the Nation's food supply. Let us, by all means, secure the benefits of early hatching, but let us also make an effort to save every chick.

ORCHARD AND FARM is in receipt of a number of inquiries from inexperienced poultry raisers, who want to know just how to feed and care for baby chicks. While we number among our subscribers hundreds of commercial poultry men who understand the subject thoroughly, we have, with the assistance of Arthur A. Peters of the United States Department of Agriculture Poultry Department, prepared for the benefit of the novice the following simple directions, which should answer all his questions.

Warmth First Essential

The first requirement of young chicks is warmth—a temperature comfortable for them. Chicks hatch in a temperature of 102 to 105 degrees F. When brooded by hens they remain under the mothers nearly all the time for two or three days. Chicks shipped in small boxes are kept warm by the heat of their bodies as long as the boxes are not exposed to near-freezing temperatures, but this natural heat is not sufficient when they are given more liberty.

Have Brooder Ready

Buyers of chicks should have a brooder ready, warmed and regulated when the chicks arrive, and it should be of the proper size to accommodate the number of chicks purchased.

If, for any reason, the brooder is not ready, take the chicks from the shipping box in a warm room; feed and return to the box; repeat at intervals of three hours until the brooder is ready.

For the first few days give very close attention to regulating the brooder for the comfort of the chicks. This is the most troublesome stage in the operation of a brooder, and the most critical period in the life of the chick.

An Emergency Brooder

Delay in delivery of a brooder sometimes puts a novice in a quandary what to do with chicks. A brooder for temporary use may be made as follows:

Use a box, without cover, about 18 to 24 inches square and 10 inches high. In one side, next to the bottom, cut an opening 3 inches high by 10 inches long for the chicks to pass through. Protect this opening with a strip of cloth, tacked at the upper edge, having perpendicular slits from the lower edge to within half an inch of the top to give the chicks passage.

This box, covered on top with a piece of old blanket or quilt, may be used without heat when the outside temperature is 70 degrees F. or over. For lower temperature a jug or a large bottle of hot water should be placed in the box and refilled as often as necessary to keep the chicks comfortable.

How to Feed

Young chicks will not eat for from 24 to 36 hours after hatching, and will not suffer if given no food until the third day. The yolk of the egg, which is absorbed by the chick, furnishes all the nourishment required during this time. It is this provision of nature for the first sustenance of the chick that makes it possible to ship newly hatched chicks considerable distances.

At the start it is advisable to feed five times a day, dividing the day into equal periods, and alternating a mash or soft feed, such as johnnycake, with a hard grain or scratch feed.

A Model Variety Ration

(Prepared by United States Department of Agriculture)

An Ideal Scratch Mixture

To be fed morning, noon and night scattered in chaff litter.

Cracked corn	5 pounds
Cracked wheat	2 pounds
Pinhead oatmeal or hulled oats	2 pounds
Broken rice, cracked peas, millet, rape, or a mixture of these	1 pound

How to Make Johnnycake

To be fed middle of forenoon and afternoon.

Cornmeal	10 pounds
Eggs (infertile)	1 dozen
Baking soda	1 heaping tablespoonful

Mix with milk to make a stiff batter; bake well.

NOTE—For small bakings of johnnycake use 1 quart cornmeal, 1 or 2 eggs, 1 teaspoonful baking soda. When infertile eggs are not available, use double the quantity of soda.

Green Feed Should Be Supplied

Any tender green stuff may be used. When a regular supply in quantity is needed, it is usually most convenient to use sprouted oats.

Water Is Absolutely Necessary

Little chicks should be supplied constantly with fresh water, in either shallow pans or small drinking fountains.

Green Cut Bone

Green cut bone can often be purchased from the butcher. This material when procured fresh makes an excellent substitute for beef scrap. It should be purchased in small quantities, as it can not be kept fresh for any length of time and when spoiled may cause severe bowel trouble. It is best fed in a trough not oftener than every other day, allowing about one-half ounce per bird. Should severe or continued looseness of the bowels follow the feeding of green cut bone it should be discontinued or the quantity reduced.

Some precaution should be taken in feeding horse meat to fowls. If the horse was healthy, and lost its life through some accident, or on account of old age, the meat would be safe to use. A number of cases are on record where fowls have contracted serious derangements from eating the meat of animals which had died from disease.

Don't let scaly-leg go beyond the first stage. It is a simple matter to grasp the fowls by the wings and dip their feet in disinfectant solution, or to apply vaseline containing a good disinfectant.

food

is mightier than pen and sword

It is the foundation of health and human energy. It produces the stamina and the strength to do things. On the field of battle—as well as on the tables where peace and plenty reign—chocolate has proved itself a 100% food.

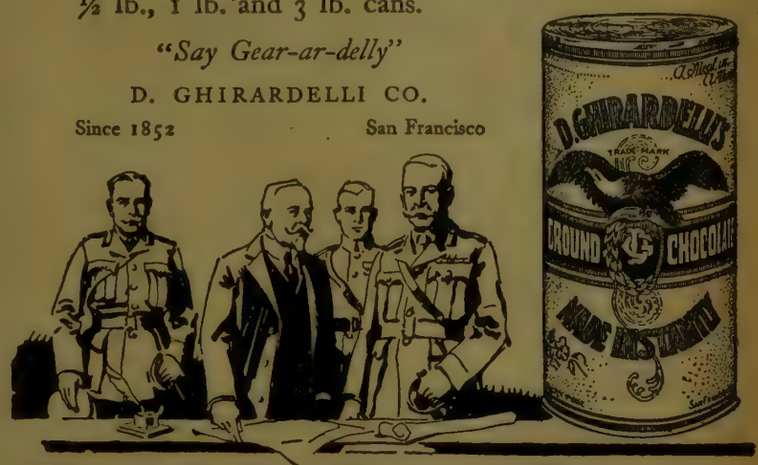
To insure supreme quality chocolate you must *insist* upon Ghirardelli's. It comes *only* in cans —*for your protection.*

At the store where you do your trading—in ½ lb., 1 lb. and 3 lb. cans.

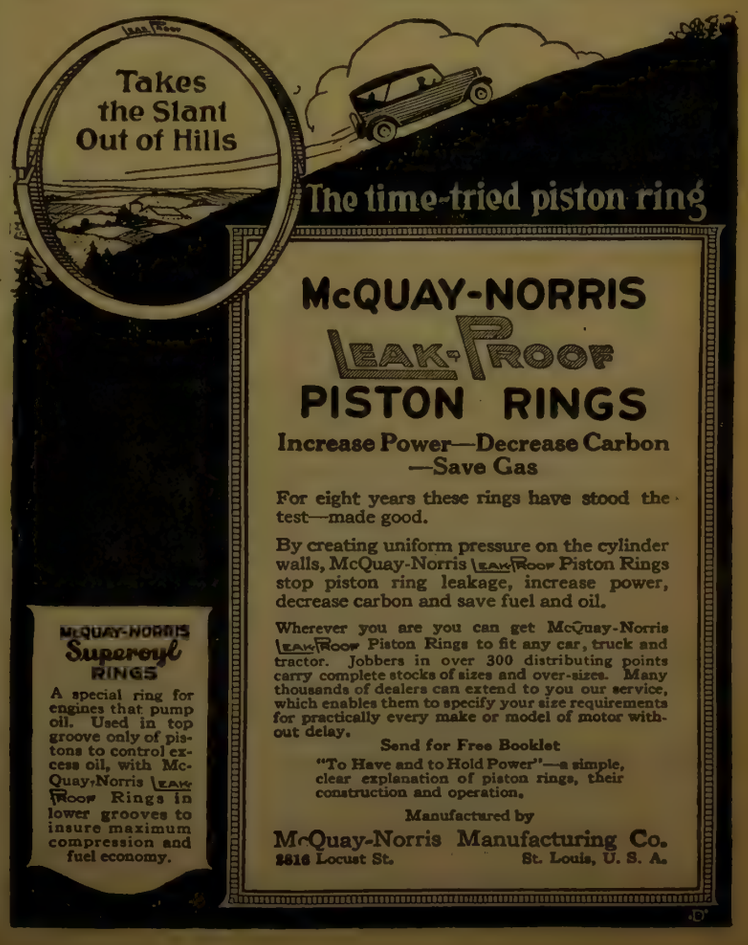
"Say Gear-ar-delly"

D. GHIRARDELLI CO.

Since 1852 San Francisco



Ghirardelli's Ground Chocolate



Spray Now!

Clean up your trees! Rid them of moss and scale! Go after big crops of good fruit! Growers all over this State are busy with their winter spraying—and these are the growers who will get the money in harvest time. If you haven't a good sprayer—pick from the complete line of

BEAN Power Sprayers

Built in a variety of sizes from the sturdy, efficient little Bean Pony Duplex outfit to the big Bean Giant Triplex, which supplies several lines of hose.

All are BEAN EQUALITY through and through—It's simply a matter of how large your orchard is.

You'll get Bean dependability—reliability—efficiency—sturdiness—in any Bean outfit you buy.

Better see your nearest Bean dealer at once—or send the coupon to us without delay. The quicker you clean up your trees the better.

You can't afford to miss any clear weather until the work is done.

Bean SPRAY GUNS are supplanting spray rods this year. They save time, money, labor. Check coupon for descriptive folder.

BEAN SPRAY PUMP CO.,
235 West Julian St., San Jose, Calif.
Gentlemen—Send me your catalog. I am interested in
POWER SPRAYERS ACCESSORIES
HAND PUMPS SPRAY GUNS
Name .....
Address .....

Bean Spray Pump Co.,

225 West Julian Street, San Jose, Calif.

Federal Farm Loans

LONG TERM LOW RATE

All loans made on an amortization plan whereby the borrower repays the principal gradually with each interest payment.

Over three thousand satisfied borrowers in this district. It will pay you to investigate.

For information apply to the nearest NATIONAL FARM LOAN ASSOCIATION or write direct to

The Federal Land Bank of Berkeley, California

"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers.

Write for information about it.

Tractor Education

THE farm boy who is considering now his education in preparation for his future work can not afford to overlook the growing importance of the tractor. More than 55,000 tractors were manufactured in the United States during the first half of 1918 alone. True, some of these went abroad, but in the meantime local demand has strengthened, and the market apparently is ready to absorb the tremendous production that is planed for 1919.

Not every farmer has a place for a tractor; very few have been able entirely to replace horses. The ideal combination on most farms using tractor power appears to be a good general-purpose machine supplemented by part of the former horse equipment.

But as for the future of the tractor, no one, in view of the developments of the past few years, can venture a prediction, except to say that it is certain to be one of the dominating factors in agricultural production.

A great deal of the dissatisfaction which has resulted from the purchase of tractors in the past undoubtedly has been due to experiments in design; but, on the other hand, lack of understanding of the principles of tractor design and operation on the part of inexperienced operators has contributed greatly to the difficulties surrounding the earlier development of the industry.

Sources of Tractor Education

Education in tractors can be obtained from a great many sources by the farmer and his son and the more they utilize all these sources of education and information, the surer are they to attain the highest success with a tractor. This also applies to the manufacturer and dealer. Valuable education and information can be obtained from a study of a neighbor's successes and failures; from the tractor schools held by the makers, and from the tractor schools at the State colleges of agriculture. Useful information may be absorbed by attending tractor shows, studying tractor bulletins of the Department of Agriculture, and attending any of the tractor demonstrations. Tractor publications, farm papers, trade papers, also from time to time give valuable information.

Country schools, high schools and colleges no doubt will attach increasing importance to tractor education, but the farm boy should lose no opportunity to study tractors of every make and design, in school or out, and the farmer who operates a machine or intends to buy one can well spend considerable of his time in studying with the boy. The tractor is with us to stay.

An Expert's Opinion

Junius F. Cook, a U. S. D. A. official who has made an exhaustive study of the tractor situation, has this to say on the subject:

"At this time it is easy to overestimate the influence the tractor will have upon this nation, but from my study and work in connection with it I think the possibilities are enormous. Before the war our food supply was growing less in proportion to the population. The tractor will help counteract this tendency.

"In conclusion I wish to say that, while I believe the industry will have its ups and downs, I believe it has a brilliant future and a most useful one to civilization the world over."

Tractors on Hills

THE tractor buyer who has heavy grades to deal with in his fields should secure a definite statement from the dealer as to the power that will be required.

In tractor operation each rise of one foot in a distance of 100 feet, or a 1 per cent grade, adds 1 per cent to the weight of the load, or to the weight of the plow and of the tractor itself. If a tractor weighs 5000 pounds and the plow 650 pounds, a total of 5650 pounds, then for each per cent of rise there must be added to the weight of the load the engine is pulling 5650 pounds, or 565 pounds on a 10 per cent grade. This is about the power required to pull one 14-inch bottom 6 inches deep through soil of average resistance, and a tractor which would handle easily a three-bottom plow on the level ground likely would be reduced to two-bottom capacity on a 10 per cent grade.

Designating Grades

There is some confusion as to the means of designating different grades. Frequently one hears the expression "degree of grade" used analogously with "per cent of grade." A degree of grade, however, is very different from a per cent of grade.

The per cent of a grade is measured by the number of feet the grade rises in a distance of 100 feet. The degree of a grade is the number of degrees of a circumference which would be contained between two lines drawn through the point where the grade begins to rise, one horizontal to the ground before the grade begins and the other drawn along the surface of the ground up the face of the grade.

A 10 per cent grade, rising 10 feet in 100 feet, is a 6 degree grade.
A 20 per cent grade, rising 20 feet in 100 feet, is a 11½ degree grade.
A 45 per cent grade, rising 45 feet in 100 feet, is a 24¼ degree grade.
A 10 degree grade rises 17 feet in 100 feet and is a 17 per cent grade.
A 20 degree grade rises 36 feet in 100 feet and is a 36 per cent grade.
A 45 degree grade rises 100 feet in 100 feet and is a 100 per cent grade.

A comparison of these two tables will show the difference clearly. It might be possible and feasible for a truck or a tractor to draw an appropriate load up a 45 per cent grade, but it is probable a 45 degree grade would present an insurmountable obstacle.

In common practice, both on the road and on the farm, 10 per cent grade and even 20 per cent grades are not uncommon, but a 20 degree grade is rarely encountered.

Horse vs. Tractor

The cost per acre of plowing with a tractor has been found to vary from $1.25 to $1.60, depending on the size of tractor, cost of fuel, etc. This is not much lower than the cost of plowing with horses. Thus the advantage does not lie so much in lower cost of plowing, but in the fact that the tractor does better work in less time. These items become apparent in increased production and in this way increase farm profits. Furthermore, the tractor reduces man labor, thereby permitting a greater crop acreage and the harvesting of larger crops with the same help.

Have a good place for the tractor tools. It is expensive to replace them. If the tool box is not strongly fastened or provided with a lock, a little tinkering at the beginning may save expense.

Size of Farm Engine

Power requirements of small farm machines vary considerably, because of the diversity of work which they do. Therefore it is not possible to select an engine that will run each machine most efficiently, and the essential point is to choose an engine which has plenty of power to run the largest machine for which it is intended.

The following list shows the power required by common machines:

Grindstone, ½ horse-power.
Washing machine, ½ to 1 horse-power.
Pump, 1½ to 3 horse-power.
Mechanical milker, same as for pump.
Feed grinder, 4 horse-power and up, depending on size.
Binder engine, 3 to 5 horse-power.
Hay hoist, 3 horse power.
Shredder, silage cutter or hay press, 6 horse power or more, according to size.

Since it is not economical to run a small machine with a large engine, it has been the practice of some farmers to construct a line shaft and operate several machines at one time. Where this is inconvenient, it may pay to have two engines, one for the smaller power jobs and one for the heavier work, or a small engine to supplement the belt-work of the tractor.

Tractor Depreciation

To Orchard and Farm:

I wish to keep cost accounts in connection with my tractor work. Will you advise me what depreciation to figure?

It is difficult to know just how long a tractor will last, or even to give average figures; a great deal depends, of course, upon operating conditions and the care given the machine, and no doubt the make and model of the machine will always have an important bearing on this subject.

Several power farmers figure 25 per cent the first year, 15 per cent the second year, and 10 per cent each year thereafter. One man believes his tractor will last 10 years and simply deducts 10 per cent a year; another, basing his estimate on his experience with automobiles, deducts 25 per cent for each of the first three years, believing that in its fourth year, the machine will have reached a very low valuation. Averaging various estimates, we should judge that 20 per cent a year for 5 years, under ordinary operating conditions, would be fair to the books and the tractor.

Tractor Power

Study of the tractor has brought out the fact that power requirements are not carefully considered when the farmer purchases an outfit. In making his purchase he is likely to consider only the power requirements for plowing or other field work which he has in mind, and later, when he decides to use the tractor for driving the grain separator or ensilage cutter, he finds that it does not develop enough belt power. Care should be exercised that the outfit purchased has ample power for the heaviest work that will be required of it.

The fact that a tractor sometimes fails to do the work expected of it is often the fault of the implement with which it operates. Especially is this true in the case of plowing. A tractor which requires three or three and one-half gallons of gasoline per acre when drawing plows that have been used a good deal and are not in absolute adjustment may use only one and one-half gallons when drawing plows that are in good working condition.

It pays to examine the radiator occasionally. A loose connection will soon result in a leak.

Cleveland Tractor

The Cleveland Tractor *does more than plow*

Your tractor, to be of real service and value to you, must do more than simply draw a plow. Plowing is *only the beginning* of what a tractor should be able to do.

It should also be able to do everything else in the preparation of the seed bed—the discing and harrowing, the planting. And it should do these things in a way that will not injure the coming crop.

The tractor should not only be able to draw the implement easily, but it should not spoil the good work the implement has done.

After the ground is broken, The Cleveland Tractor *goes over it* with the disc and the harrow, then *goes over it* with the seeder.

The Cleveland *rides on top* of the seed bed; *it does not sink into it and it does not pack the soil.*

The Cleveland *goes over soft ground* because it travels on its own endless tracks which it picks up and lays down as it goes along.

These tracks have about 600 square inches of traction surface, so the pressure on the ground is only about five pounds to the square inch—therefore there is not enough weight on the ground at any one point to inflict damage.

We repeat, The Cleveland Tractor *rides on top* of the seed bed. It *does not sink into it;* therefore *it does not have to wade or wallow through it.*

And because it *does not sink in,* it does not have to push the dirt in front of it and pack it down in order to navigate.

And because it is not obliged to push the earth in front of it and pack it down, the greatest possible amount of The Cleveland's power is available for accomplishing the work it has to do.

This is one of the reasons why *The Cleveland performs so much work on such a small amount of kerosene.*

These are but a few of The Cleveland Tractor's many advantages. It is capable of performing almost endless tasks in both tractive and stationary engine work.

The Cleveland does its work. It does it well. It keeps on doing it. It is the tractor that does the work you want a tractor to do, in the way you want it done.

The Cleveland Tractor Co. 19081 Euclid Ave., Cleveland, Ohio

The largest producer of crawler type tractors in the world

Dealers of Southern California who handle this Cleveland Tractor and who have reasonable and efficient service of users:

J. W. Cox, Whittier.
John L. Wheeler, 321 East Fourth street, Santa Ana, and Orange.
A. H. Sitton, Fullerton and Anaheim.
Fletcher & Smith, 401 Orange street, Riverside.
Stewart & Ruble, Santa Maria.
W. E. Johnson, Lompoc.
San Luis Hardware and Implement Co., San Luis Obispo.
Fletcher & Elston, San Fernando.
C. E. Scott, Lindsay and Porterville.
S. D. Brockman, El Monte.
Dinuba Garage, Dinuba.
Dunn Manufacturing Co., Oxnard.
John Opsahl, Fillmore.
Waterman & Bernard, Ventura.
Krough Bros., Hanford.
George Elliott, Bakersfield.
C. S. Anthony, 164 North Los Angeles street, Los Angeles.
George M. Huebsch, Pomona.
Covina Garage and Machine Shop Association, Covina.
Smith Bros. & Tipton, Visalia.

"30 MINUTES FROM SERVICE"

SMITH BROTHERS

1616-18-20-22-24 SOUTH FIGUEROA ST.
LOS ANGELES

TOP DRESSING TALKS

Early in the war we announced that Arcadian Sulphate of Ammonia had been conscripted for the manufacture of munitions. But now the war is over and with an honorable discharge from war duty it is again available for use as a nitrogenous fertilizer.

The leading agricultural authorities and the successful growers of California have about come to the conclusion that nearly all soils and nearly all crops will benefit by an application of a readily available nitrogenous fertilizer. Indeed, the question is not whether or not to do it, but what to use and how.

There are half a dozen reasons why Sulphate of Ammonia is the best form of nitrogen to use. We will take them up in later talks.

Use Arcadian Sulphate of Ammonia As a Top-Dressing

Arcadian Sulphate of Ammonia is the well-known standard article that has done you good service in your mixed fertilizers for years past, specially kiln-dried and ground to put it in splendid mechanical condition. Ammonia 25¼ per cent. Made in U. S. A.

Write to

The Barrett Company

AGRICULTURAL DEPARTMENT

510 First National Bank Building, Berkeley, Cal.

for the name of the nearest dealer or for directions for applying Arcadian Sulphate of Ammonia.

Killing Woolly Aphis on Roots

A Successful Method of Combating This Serious Pest

CARBON disulphid, in solution at the rate of one-half ounce to four gallons of water and applied at the rate of three-fourths gallon per square foot of soil, will control the root form of the woolly apple aphis and without injury to the trees under suitable conditions, according to scientists who have been conducting experiments. The solution is prepared by pouring the carbon disulphid into the water and agitating the mixture vigorously. When applied on the soil around a tree the liquid penetrates into the ground and the poison gas given off by the chemical kills the pest. Every square foot of infested soil should be subjected to the action of the solution in order to insure complete control. This may be accomplished by pouring the liquid in a shallow basin made in the soil around the tree.

Large Trees Present Problem

In orchard practice where many trees are to be treated the solution is best applied by using a power spraying outfit and two auxiliary tanks. The advantages of this method are the even diffusion of the liquid, complete aphid mortality in the soil area treated and the safety with which the disulphid can be used. The disadvantages of the method are the huge amounts of water required, with consequent high cost of labor; the difficulty on any but level ground of preparing basins with level floors, thus insuring the proper distribution of the liquid over the area to be treated; and the wide area of infested roots on older trees, every square foot of which must be treated with the liquid. This last condition precludes the use of carbon disulphid except on small trees with restricted root areas.

Sodium cyanid, kerosene emulsion and deep planting of trees were other measures of control investigated, but they are not to be recommended.

Breeding Terms

(Continued from Page 7)

taught that skill on the part of the breeder is necessary for its proper use.

Inbreeding intensifies. If it intensified only the good characteristics of animals with no ill results, then certainly it would be the wise and simple method. But inbreeding intensifies faults as well as perfections, and faults intensified are as difficult to eliminate as perfection intensified is easy to maintain. It is, therefore, plainly seen that inbreeding should be used only when animals so mated have attained a high degree of excellence without possession of a serious fault. Those famous breeders, whose names live in history, have used inbreeding to fix and preserve that which, through years of persistent, intelligent, patient breeding, they have attained by other methods.

A Safe Method

Line-breeding is safe breeding, provided it is employed in a family of excellence; that is, a family endowed with largeness of production, excellence of type and acceptable breed characteristics. Line-breeding is a conservative method. It may be referred to as just between the extremes of outcrossing and inbreeding. Line-breeding implies the mating of animals remotely related, such as grandsire to granddaughters, great-grandsire to great-granddaughters, uncles to nieces, and second cousins.

Line-breeding perpetuates good blood and, like inbreeding, it intensifies excellent characteristics, but it differs from inbreeding in that it permits of bringing in the blood of other animals or families in a gradual manner and without outcrossing to correct deficiencies. If, in the beginning, a good class of blood is selected and persistently, generation after generation, good judgment is used in selecting the blood of other families brought into the herd, and if the new blood be brought in along with additional blood of the family already there, the excellent characteristics of the herd are maintained and the deficiencies corrected.

A study of the history of the world's greatest animals in all classes of livestock reveals that the most headway has invariably been made by judicious line-breeding, and, when perfection has been as closely approached as seems possible, inbreeding has fixed the type and excellencies so that they could be perpetuated with considerable certainty.

Save Every Copy

OF Orchard and Farm. At the end of the year we will publish a complete index of all the numbers for 1919. You can then bind the volume for ready reference, and quickly find information upon any desired subject. Many of our readers find it easier to save each copy than to clip out special articles; frequently, moreover, the subscriber will destroy one valuable article in cutting out another. This new plan, therefore, should make Orchard and Farm even more valuable to its big host of friends. But in order to secure the benefits of the complete index for the year, you must preserve your copy of each issue. And don't let your subscription expire.

Bees as a "Sideline"

The keeping of a few swarms of bees has proven to be a highly profitable side-line for many ranchers and fruit growers. Bees are necessary for the proper pollination of nearly all fruits and berries, some vegetables, alfalfa and clover where grown for seed. They will increase the crop in the case of some varieties from 10 to 100 per cent, producing more perfect, therefore, more salable fruit. A few colonies of bees require less care than a cow or a small flock of poultry, and will produce annually a considerable amount (10 to 40 pounds per hive) of surplus honey, which may be used as food, sold for cash or disposed of in any other way.

The care of the bees on the farm would be in the hands of the member of the family who has the steadiest nerves, who is a keen observer, gentle mover and lover of live things. If such a one will devote a little time to proper handling of the bees they will prove to be a most valuable addition to any farm and will provide a large amount of honey which will be a big help in these times of sugar shortage.

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ORCHARD SPRAY

A million dollar's worth of damage each year—that's what the pear thrips is capable of doing to the pear, prune, cherry, plum and other fruit trees of California. Because of the minute size of the insect—the rapidity of its spread over large areas and the suddenness of attack in great numbers—the control of this pest has always been a serious problem.

We have conclusive proof, however, that it can be controlled by thoroughly spraying with

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ARTHUR CANN
SEEDSMAN
198 S. First St. San Jose, Cal.

Campbell's Article

(Continued from Page 6)

ments were conducted under the same conditions of wind, rain and sunshine. But one field was ruined by hot dry weather and the other made a good crop, the result of timely preparation and cultivation.

In illustration No. 1 we have another proof that timely tillage of the right kind and thinner seeding will offset the ill effects of hot, dry weather. The field in the foreground of this picture was fitted along lines commonly practiced, and was seeded with 60 pounds of wheat per acre. As can be determined by comparison with the man standing in the field, the grain did not grow much nor even head out. This was also true of nearly all surrounding fields. But the plat in the background, in which the wheat grew as high as the man's waist, was carefully summer-tilled and seeded with twenty pounds of seed, with the result that it produced 33 bushels of wheat to the acre. So perfect was the grain that it weighed 62 pounds to the measured bushel. Here again were the same soil, same rain, and same sunshine. One crop was ruined by prolonged, dry hot weather; the other, under same weather conditions, made a good crop. These and dozens of other similar instances that can be given should certainly be sufficient evidence to warrant the employment of these methods. If earlier plowing and more persistent work to obtain and retain a finer, firmer seed bed, will add five or ten bushels per acre to the yield, the system is at least worthy of trial. If half of the seed commonly sown is really wasted and if the other half, under proper conditions, will really give a better crop, is not the situation worthy of careful thought?

Campbell Recommends

(1) Preparation for plowing by loosening the soil at the surface early in the spring or just after the harvest in summer or fall. (Double disking immediately behind the harvester is one good method.)

(2) Thorough and early plowing, but not so deeply that the plowed ground cannot be packed.

(3) Immediate packing of the lower part of the plowed ground by means of a subsurface packer, or disc harrow well weighed and set straight.

(4) The maintenance of a comparatively coarse mulch to a depth of two and one-half inches, and harrowing after each rain that is heavy enough to cause the formation of a crust; thorough tillage for a considerable time prior to seeding.

(5) The use of much less than the ordinary quantity of seed.

(6) In the case of cultivated crops, frequent and thorough cultivation.

Campbell's book, Progressive Agriculture, goes into detail with respect to different crops and varying conditions, and contains some valuable information about spring tillage and summer fallow. Copies may be obtained either as premiums with Orchard and Farm subscriptions, or by cash payment. See our offer on page 17.

Sow Morse's Seeds

for

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—good, cool **Salad**
—steaming **Succotash**
—delicious **Catsup**
—old-forgotten **Sauerkraut**
—fine old **Picalilli**
—best sweet **Pickles**
and finish off with
—grand old **Pumpkin Pie**
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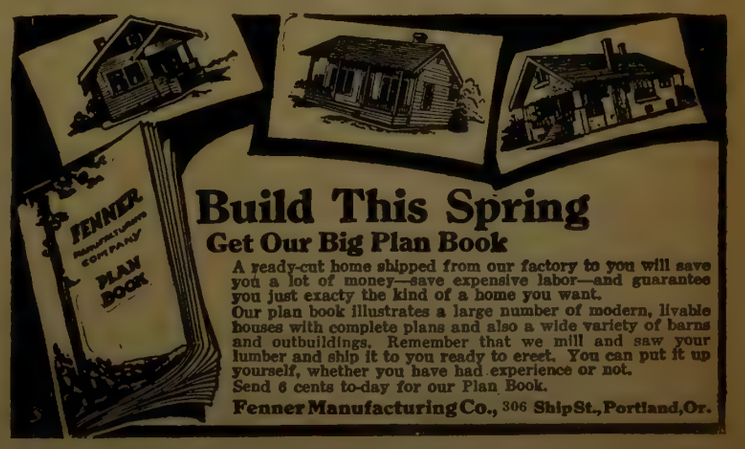

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HELPFUL HINTS for THE HOUSEWIFE

Edited by Isabel Sinclair

The Home is the Hub of the Universe

Dear Friends:

The new food-saving campaign will exert an appeal to women almost as strong as the one which was in force during the war. That was based on patriotism; the present one deals with the succor of starving people. Tremendous food shipments must go on—and on—and on, until nowhere in the world are there men and women and babies who die for want of a little to eat.

Herbert Hoover's humanitarian appeal made more than a year and a half ago holds good for the present and prospective gigantic task of world relief.

"The food supplies of the world have been steadily lessening," he said. "It is the impact of this shortage which has knocked at every door in the United States.

"We hold it in our power, and ours alone, to keep the wolf from the door of the world. This duty is wider than war; it is as wide as our humanity."

American soldiers and American resources in food and materials have helped to win the war. Our men and our resources are still mobilized. The women, who are the guardians of our food resources, must also remain on duty until they are mustered out. The new program in conservation calls for much more rigid acceptance and discipline, because it does not demand brief, dramatic sacrifices, but a steady, unvarying saving of all foods and the giving up of everything beyond our definite needs.

Every woman is called to serve in the work of world relief! "Shall children die and mothers plead in vain?" —Isabel Sinclair.

Have Potted Meat Ready

The end of a boiled ham or corned beef with bone and gristle removed and fat and meat chopped fine, may yield more than could be used advantageously at a single meal. Heat it, with little water, in its own fat and pack solidly in jelly tumblers or small jars. There should be a quarter inch of fat on top to harden and form a seal from the air. With a tin cover on top, meat thus prepared will keep several weeks.

Seasoning may be added as for any potted meat. Meat thus prepared, both fat and lean, is ready to be used with from two to four times its bulk of potatoes or other vegetable for hashes, or for sandwiches.

If old wool garments that are to be stored for remodeling in the future are first ripped and cleansed, there is not so great a chance for infestation by moths; the material, further, will be in good condition to work with when the time comes for using it.

Folks who have learned once again how good cornmeal mush is for supper are not going to abandon it now merely because wheat dishes may be used more plentifully.

Cooking Dried Fruits

Unless dried food is prepared in a palatable fashion, the family will tire of it and it will be wasted. This will react unfavorably on the gardens for next year and on the drying campaign.

The main difference between dried and fresh foods lies in the proportion of water they contain. Therefore the first step in preparation is to put back water about equal in amount to that lost during drying.

One reason why dried foods have been unpopular is that they so often have been undersoaked and overcooked. When the time of soaking is long, and that of cooking short, the flavor will be more like that of fresh food.

Shape and texture must be considered; the more solid the article the longer the time required for drying, and hence the longer the period of soaking required. After washing, such foods should be put into three or four times their bulk of water and left covered in a cool place from three to forty-eight hours, according to their substance.

Should any indication of fermentation appear, they must be scalded at once. Otherwise leave them until they regain their original size or lose most of the wrinkles in the surface; then the time of cooking will be but little longer than that needed by the same fruit or vegetable fresh from the garden.

The water in which fruits have soaked should be used to cook the food. In case of high flavored fruits, like the apricot, more water may be used for cooking and that in which it soaked will serve to give flavor to tasteless apples or a gelatine dessert.

More than 25 women have made good during the past year as official cow-testers in various parts of the United States. Members of cow-testing associations who have employed the women express themselves as very well pleased with the dispatch and accuracy with which they performed their work, and it is not improbable that more women will be attracted to this field.

The ways of Nature are wonderful, for just as the coming of spring is the signal for all of Nature's forces to awake, so it arouses the energy and ambition of the men and women, each of whom instinctively turns to the work that he loves best.

Liberty Cabbage

In making sauerkraut, the loose, green leaves are removed from the cabbage, the heads are cut lengthwise, and the cores taken out with a sharp knife. The cabbage is next cut in long, fine shreds, either with a knife or on a cutting board. This board preferably is provided with a sliding box in which to hold the cabbage as it is being shredded, to prevent the cutting of the operator's fingers.

Use Earthen Jar

A layer of shredded cabbage 4 to 6 inches deep is then placed in the bottom of an earthen jar. Dairy salt or the best grade of table salt is sprinkled over the surface at the rate of one pound of salt to 40 pounds of cabbage. The layer is tamped with a hardwood weight. Other layers are added, salted and tamped until the jar is heaping full. If desired, a few juniper berries may be added to give a distinct flavor. Loose cabbage leaves, thoroughly rinsed, are laid over the kraut, and a porcelain plate or perforated wooden cover is fitted to the inside of the jar. A clean stone is used to weigh the lid down during the curing process. If the tamping has been thoroughly done, the contents of the jar, other than the stone weight, will be covered with liquid. Protection from dust and flies may be provided by tying several layers of cheesecloth securely over the jar.

Time of Curing

Kraut made early in the season cures in sixteen to twenty days. Later in the season, the curing process continues for three or four weeks. Since a temperature of 59 degrees to 64 degrees Fahrenheit is most favorable to the bacteriological action that effects the curing, it is best to place the jar in a cellar or a cave. Several days should be allowed after the kraut is cured before it is used. The curing process is completed when bubbles cease to rise at the edge of the jar.

The cabbage leaves, with possibly a thin layer of discolored kraut, will need to be discarded from the top of the jar. Properly cured kraut is of a rich light yellow color.

Three C's for caring for milk in the home: Keep it cold, covered and clean.

WHY I LIKE TO WASH

I THINK "blue Monday" was named by a woman without imagination. There's a real satisfaction in beginning the week by bringing fresh, pure cleanliness to soiled garments and dingy linen. What I really like about it, of course, is the result—not the process.

For I look forward with real pleasure to taking in the things, with their indescribably sweet, clean smell, after they have been purified by the wind and sunshine. In fact my "foolishness" is so pronounced (I confess it shamefacedly) that I sometimes even slip back to my childhood days and, half closing my eyes, imagine that I see pretty fairy wings hidden in the dancing line of glistening white. Yes, strange as it may seem, I really love to wash!—Virginia.

Glue in the Household

So many are the uses to which the housewife can put a bottle of glue, that no home should be without it. Here are a few suggestions, which will in turn suggest scores of other uses:

When spring comes and furs and woolens are to be put away, take several thicknesses of old newspapers and glue firmly together to form the proper sized bag. After articles are put in, seal the ends and sides with glue and the bag is dust and moth proof.

When stringing beads, in tying the string to the clasps the knots are very apt to slip. If, after the knots are tied, they are covered with a thin layer of glue, they will hold very much longer.

Very often a small piece of leather on good shoes will be lifted or loosened. Do not tear it off or try to cover with blacking. Flatten the piece in place with a little glue and allow to dry. Then apply blacking and the surface will appear as good as new.

A Convenience for Dad

Mere man isn't usually considered in the household arrangement. But he is worth a little thought and care, and even if he can't put his heels on the purple satin sofa pillows, let him revel in the luxury of a night-table at his bedside.

Just a tiny table, with a drawer or two, which may contain his favorite liniment, hair tonic, cough drops or magazine. He may enjoy reading a bit after he retires. Then let him have a light, his spectacle case, and his book. The important thing, aside from a timepiece, is an electric flash light, which will save many painful bumps and words when suspicious sounds from the garden necessitate a trip in the dark in order to deprive bossy of a dainty meal.

Do let him have a table by his bedside.—Nellie M. Killgore.

Freshening Artificial Flowers

First brush and shake the flowers to remove all the loose dust. Silk flowers may be dipped in clear gasoline, worked about, and then shaken well to remove the dust and dirt. If the flower is faded, a little oil paint may be mixed with gasoline and applied with a brush, working from the darker to the lighter parts.

When the flower is of velvet it may be cleaned by working into the velvet a paste made of flour and gasoline. When the gasoline evaporates the flour is brushed off. The velvet flower may also be brightened with the oil paint and gasoline.—Charlotte E. Carpenter.

Watch the poultry lovers! They seemingly cannot prepare quickly enough for the spring hatch and the pleasure of watching the chicks grow and thrive; the orchardist is out among his trees, studying, planting, pruning, renovating. And a real gardener can no more keep from digging in the soil this month than the birds can keep from flying!

Warm tights for the youngsters may be made from one or two pairs of discarded stockings.

Rheumatism

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

Cured His RUPTURE

I was badly ruptured while lifting a trunk several years ago. Doctors said my only hope of cure was an operation. Trusses did me no good. Finally I got hold of something that quickly and completely cured me. Years have passed and the rupture has never returned, although I am doing hard work as a carpenter. There was no operation, no lost time, no trouble. I have nothing to sell, but will give full information about how you may find a complete cure without operation, if you write to me. Eugene M. Pullen, Carpenter, 749E Marcellus avenue, Manasquan, N. J. Better cut out this notice and show it to any others who are ruptured. You may save a life or at least stop the misery of rupture and the worry and danger of an operation.

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Cleaning and Pressing

HAVE you not often contemplated with dismay the charges for cleaning and pressing clothing, and wished that you could care for the less seriously damaged garments yourself? It is not as difficult as one would suppose to do the ordinary cleaning and sponging in the home.

Dark-colored suits, when not badly soiled, can be sponged and pressed. Brush them well with a good stiff brush to remove all loose dust and dirt. Then sponge thoroughly till they are well moistened, with a lukewarm mixture of one part of household ammonia to three parts of water; brush well again, hang up to dry, and finally press with a heavy iron, laying a cloth over the goods. Any grease spots not yielding to this process may be removed by rubbing with a cloth soaked in gasoline.

For New Goods

To sponge new cloth, take a heavy cotton cloth, wet it thoroughly and wring it out. Spread your goods on a table, folded into four thicknesses, and lay the damp cloth over it, ironing with a heavy iron until one side is done; repeat on the other side.

When removing a spot do not begin to work right on the spot, but start some distance away and gradually work toward it, using a good brush. In this way you will avoid leaving a ring.

Spotted Garments

Dark-colored garments which have had the color entirely removed in spots by acids may be restored by an application of ammonia, and to those which have been spotted by alkalies, an application of diluted acetic acid is beneficial. A garment spotted by the rain may be freshened by laying it over an ironing board and steaming it. This is done by placing a damp cloth over the article and ironing.

To remove blood stains, or glue stains on woolen, cotton, linen or silk, wash with warm water to which one teaspoonful of soda to each quart of water has been added.

To remove varnish or paint on wool, cotton or linen, rub carefully with gasoline and soap; on silk use plain gasoline.—Hazel Zimmerman.

Washing Woolen Socks.

How should a woolen sock be washed?—Mrs. R. S. B., Visalia.

Throughout the operation of washing, the water should be kept at the same temperature, preferably tepid. A good pure, white soap may be dissolved in the water to avoid rubbing it directly upon the socks. After they are thoroughly washed, the water should be squeezed out; the socks should never be wrung. They are then to be put through at least two, preferably three, rinsing waters of the same temperature as that of the suds. They are now ready to be pressed and dried. The socks should be stretched into shape, laid one upon another, wrapped in a cloth to absorb the moisture, and placed on a flat surface under a weight for several hours. At the end of that period they may be unwrapped and shaped separately to finish drying.

Culture and Agriculture

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A rule that to all a true message extends.
It applies to soil-culture; to living, no less,
For it pays to take time just to cultivate friends.

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IN a climate not excelled by any agricultural area in America you can own a fine, rich farm of your own. The Canadian Pacific Railway offers you this opportunity to achieve independence and grow rich—in Western Canada. The lands offered are in the largest and most substantial irrigation undertaking in the Continent. The price is only $50 an acre—some for less.

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You pay down 10% and have 20 years in which to pay the remainder. The first crop is often worth more than the total cost of the lands.

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This land is not arid but production can be greatly increased by irrigation. There is an unfailing supply of water which is administered under the direction of the Canadian Government. The provinces have no control over it and there is no conflict of law or authority over its use. The water is free, the only charge being a fee of from 50c to $1.25 per acre for the maintenance of the system and the delivery of the water. Irrigation here is *not* an experiment.

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Because irrigation in Southern Alberta
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—increases crops every year
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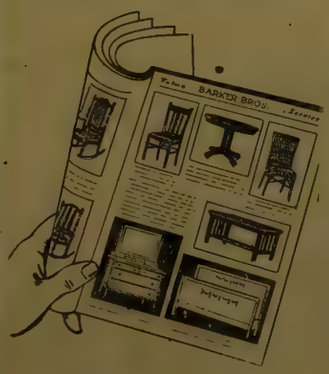

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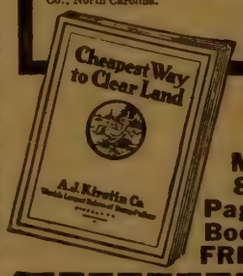
If there is a better machine than the KIRSTIN, it must be a peach. —Y. E. Newcomb, Creswell, Ore.

My pine stumps are solid in the ground, and average about 1 1-2 to 4 feet across the top, but the little KIRSTIN takes them all out fine.—Mr. R. J. Stoltz, Washburn, Wis.

Pulled oak stumps up to 38 in., pine stumps up to 24 in., in "Pipe Clay"—one had tap root 12 ft. long, *and still I did not stall my Kirstin.* —Titus E. Chappell, Tyner, Chowan Co., North Carolina.



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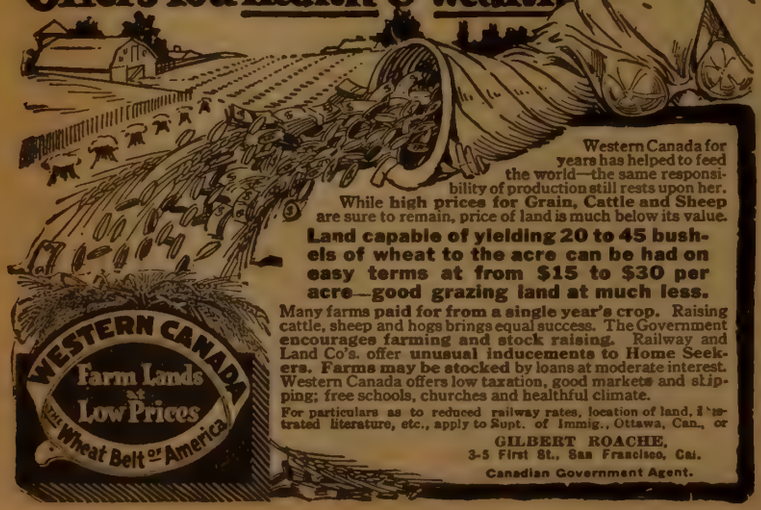

Western Canada for years has helped to feed the world—the same responsibility of production still rests upon her. While **high prices for Grain, Cattle and Sheep** are sure to remain, price of land is much below its value.

Land capable of yielding 20 to 45 bushels of wheat to the acre can be had on easy terms at from $15 to $30 per acre—good grazing land at much less.

Many farms **paid for from a single year's crop.** Raising cattle, sheep and hogs brings equal success. The Government **encourages farming and stock raising.** Railway and Land Co's. offer **unusual inducements to Home Seekers. Farms may be stocked** by loans at moderate interest. Western Canada offers low taxation, good markets and shipping; free schools, churches and healthful climate.

For particulars as to reduced railway rates, location of land, illustrated literature, etc., apply to Supt. of Immig., Ottawa, Can., or

GILBERT ROACHE,
3-5 First St., San Francisco, Cal.
Canadian Government Agent.

The Carob Tree

(Continued From Page 10)

der, found a way to overcome this difficulty and also successfully to bud the trees so that a large portion of them would grow. Three distinct self-fertilizing varieties were finally developed. The analysis of the pods, as determined by University of California chemists, is given below:

	Name of Tree		
	Excelsior.	Bolser.	Spinks.
Water	12.50	8.21	11.14
Ash	2.28	2.71	2.55
Protein	5.09	7.18	2.02
Fat	2.08	.71	3.76
Crude fiber	4.97	4.73	7.77
Invert sugar	5.71	8.36	17.46
Sucrose	37.88	43.62	27.40
Starches	29.49	24.48	28.96
Total carbohyd's.	73.08	76.46	73.76

The Excelsior, so far as we know, has the highest sugar content of any variety which has been offered to the public, but the other types, while not containing so much sugar, have bearing qualities which we feel sure will make them very popular. We are convinced, however, that because of the fact that it bloomed in its second year, the Excelsior will prove especially precocious.

Climatic Adaptation

The carob tree thrives in arid situations and in its native haunts grows down to the water's edge among the rocks. It is safe to say it will do well in any of the coast counties of California, south of San Francisco; also in valleys near the coast, such as the Imperial Valley and in certain sections of the great interior valleys. The young trees may have to be protected where it is likely to become colder than about 22 degrees above zero; but new experiments may develop hardier varieties.

Future Possibilities

C. W. Beers of Los Angeles, formerly the horticultural commissioner of Santa Barbara County, who is considered the leading carob expert in California and probably in the United States, has expended much money and valuable time in research work. Mr. Beers has a vision of the possibilities of the carob for sugar making and for human food as well as for a forage crop, and his recent experiments have resulted in the production from the carob beans of a syrup which was found to be an excellent substitute for cane or beet sugar. Future research may reveal possibilities for this tree which are as yet undreamed of.

Yield of Pods

Thirty feet apart is a good distance to plant the trees, either for a border or in orchard form. This distance is believed to be conducive to the heaviest yields. In their native lands, mature trees are known to produce 1500 pounds of pods each, or about 30 tons to the acre. However, a conservative estimate of average production would place the yield at from 300 to 900 pounds to the tree, or from 6 to 22 tons per acre. Compare this with barley, and consider that the feeding value is greater than that of either barley or oats!

It is the nurseryman's business to find, produce and distribute new plants after making a thorough investigation of their possibilities and being reasonably sure they have merit. I feel very sure of the future of the carob, but do not advise the planting of large acreage now. It is better to try a few test trees first.

Mary had a little lamb—
And very little, too—
With lamb at 60 cents a pound,
What else could Mary do?

Most persons are more concerned in advising the farmers to "trade at home" than in learning why some of them do not.

Federal Land Bank

(Continued From Page 3)

a tremendous area, and can easily understand why, under all the distracting circumstances, it took so long to dispose of this huge accumulation of work.

This situation, however, has been entirely overcome; today there are less than four hundred unconsidered applications before us and nearly all of these are in the hands of our appraisers for prompt attention.

Many Associations Formed

We have thought that possibly some further publicity was desirable, but it must be borne in mind this bank now has under its supervision 154 chartered National farm loan associations, with an aggregate membership of nearly 3500, and these associations, through their officers and members, are disseminating to their neighbors the gospel of the beneficence of the Farm Loan Act.

The Federal Land Bank of Berkeley is entering the new year with every confidence that the success which it achieved during the year 1918 will be at least repeated and probably surpassed.

Problems of organization and operation have been met and solved, and the business of making loans to farmers throughout the Eleventh District is progressing in an orderly and uniform manner. The great accumulation of business which confronted the bank a year ago has been disposed of, and farmers are now being given the service which might reasonably be expected from any other financial institution doing a similar business.

Ten Million Loaned

The total amount of loans made to the farmers of the Eleventh District by the Federal Land Bank of Berkeley for the period ending December 31, was $9,573,600. In addition to this, loans have been approved and are now in the process of closing, amounting to $1,750,000.

The expenses during the initial stage of the business were of course heavy, and owing to the fact that it took a considerable volume of business to offset these expenses, it required some time to bring the income up to a point where all of the expenses were met; however, this has been accomplished, and more. The income of the bank now exceeds its expenses by a satisfactory margin, and in a few months more the total organization expense will have been absorbed and the bank will have begun to accumulate a surplus.

Tremendous Possibilities

It may now be stated confidently that the Farm Loan System in its entirety has not only demonstrated its usefulness, but has already proved an unbounding success. The amount so far loaned to the farmers of the United States through the Federal Farm Loan System has reached the enormous sum of $160,000,000, and more than 66,000 farmers have been served.

In contemplating this achievement for a period of less than two years of active operation, during which time the organization of the banks and the thousands of farm loan associations had to be perfected, it may well be concluded that as the years go on the ultimate usefulness of the system to the American farmer will be almost limitless.

Yours very truly,
(Signed) W. H. JOYCE,
President.

(Continued on Next Page)

Requirements for Loans

How to Get Money

FIRST, you must join with other prospective borrowers in a National Farm Loan Association, which, having met certain requirements of the act, may be chartered and authorized by the Federal Farm Loan Board to place loans on farms in its county. The territory of the Berkeley district embraces California, Utah, Arizona and Nevada.

WHO MAY BORROW. Loans are made to actual farmers only and on farms of a size and of sufficient production to maintain the family of the borrower and also to provide sufficient income to meet the semi-annual payment on the loan.

AMOUNT. The amount that may be borrowed on properties is 50 per cent of the appraised value of the land, plus 20 per cent of the value of permanent, insurable improvements, and to arrive at this value the property must be twice appraised, first by the Association Loan Committee and then by a Federal Land Bank appraiser. No loan may exceed $10,000.

TIME. The time a loan may run is set by the applicant (in most cases) and may be for not less than five years nor more than thirty-five years. Only regular payments may be made during the first five years, but after that time the borrower is permitted to pay off his loans as fast as he may desire. No loan, however, can run for a longer time than that mentioned by the borrower in his application.

PURPOSES. The Federal Land Bank requires a "first" mortgage, and the money may be used in various ways, but for useful purposes only. Moreover, the purposes for which the money is to be used must be clearly stated in the application. Some of the purposes are:

- Purchase of land for agricultural purposes.
- Removing incumbrances against the property.
- Providing improvements, such as buildings, fences, etc.
- Developing water for irrigation.
- Purchase of livestock, implements, fertilizer, etc.

EXPENSES. There are some necessary expenses connected with carrying a loan through, but these expenses are no source of profit to either the Land Bank or the Association. These charges will be explained to you when you file your application with the secretary of your association. The Land Bank also makes a moderate charge for legal expenses connected with drawing the papers, examining titles, etc. The applicant must, of course, take care of any title or recording charges.

STOCK. Each applicant is required to subscribe for stock amounting to 5 per cent of the loan, but on this stock there will be paid dividends throughout the lifetime of the loan, and the stock is then used to pay off a part of the loan.

PAYMENTS. Payments are made semi-annually and in addition to the interest a small part of the principal is also repaid in such a way that at the end of the term both interest and principal have been paid in full.

APPLICATIONS. Application blanks and all required information will be furnished by the Secretary-Treasurer of Associations or by the Federal Land Bank of Berkeley, Berkeley, California.

WALLIS

America's Foremost Tractor

WHETHER plowing, threshing or doing other farm work, the Wallis Tractor gives true economy.

Wallis first combined light weight, great power and durability in a tractor; built a tractor weighing 1000 to 5000 pounds less than others of equal power.

This was accomplished by replacing heavy cast and malleable iron with strong, light steel; by designing light-weight, sturdy drive wheels; by introducing the simplified "U" frame—the lightest, yet strongest, construction known to mechanics.

Wallis first enclosed all gears, including the final drive—thus saving power and protecting vital parts. The Wallis motor and transmission are as perfectly finished as an automobile motor.

The result is a tractor that burns one-third to one-half less fuel per acre plowed; that cuts the cost-per-acre of plowing to the lowest figure ever known. It made the Wallis America's Foremost Tractor.

The latest Wallis catalog tells all about this tractor. Write for a copy and for name of near-by Wallis dealer.

J. I. CASE PLOW WORKS, 514 W. Sixth St., Racine, Wisconsin

Sales Agents for Wallis Tractors

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Minneapolis, Minn., Omaha, Neb., Baltimore, Md., Washington, D. C., Toledo, O., Cedar Rapids, Ia., Columbus, O., Dallas, Tex., Sioux Falls, S. D., Des Moines, Ia., Richmond, Va., Saginaw, Mich., Kansas City, Mo., St. Louis, Mo., Little Rock, Ark., Oklahoma City, Okla., Denver, Colo., Blomington, Ill., Syracuse, N. Y., Indianapolis, Ind., San Antonio, Tex., Great Falls, Mont.

WALLIS TRACTOR COMPANY RACINE, WIS., U.S.A.

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Distributors Everywhere.

Douglas Boswell, Sacramento, Calif., Distributor for Cal.f., Ore., Wash. and Northern Idaho.
Canadian Fairbanks-Morse Co., Ltd., Winnipeg, Saskatoon and Calgary, Distributors for Canada.

Are You Paying Taxes On Your Stump Land?
Clear It and Make Money.

Increase your acreage and you will increase your bank account

Clear your stump land cheaply no expense for teams or powder

ONE man with a "K" can outpull 16 horses. Works by leverage—same principle as a jack. 100 lbs. pull on the lever gives a 48 ton pull on the stump. Made of the finest steel—guaranteed against breakage. Works equally well on hillsides and marshes where horses cannot operate. Endorsed by U. S. Government experts.

Write today for special offer and free booklet on Land Clearing

WALTER J. FITZPATRICK

Box 25 182 Fifth St., San Francisco, Cal.

Your opportunity is here to-day

STOP paying taxes on your stump land turn it into *money*. Never in the history of the World was there such a demand for the product of the soil.

HAND POWER

K Stump Puller

Man or woman single handed can pull from 50 to 150 stumps a day. Weight without cable 171 pounds. NO STUMP TOO BIG.

The Home Flower Garden

By Mrs. E. E. Paquette
1118 Poli Street, Ventura, Cal.

SPRING is here, so gently are we in California wafted from season to season that the difference is scarcely perceptible. And we will have entered on the summer season before the frozen East is released from the grip of Jack Frost!

A Busy Month

There is no month in the year when there is more to be done in the flower garden than in February. Mother Nature knows it, and she has put some kind of tonic that gives us the energy to work into every bit of air we breathe.

There is a soft, warm dampness that makes everything grow; the ground is in fine shape for working; the rain has washed clean the leaves of the evergreens, and the deciduous trees are putting on their new spring dresses. Therefore, we feel we must keep the gardens as clean as they are. A mocking bird on my neighbor's chimney is calling to me to "Hurry-up, hurry-up, hurry-up"; even he wants to be busy.

Spring Pruning Advice

It is a problem for some workers to know what to prune and what not to prune in the spring, and the only way to learn is to study your plants. Do not prune the climbing roses; they should have been attended to last fall. If it was not done then and you feel that the vines "just must" be trimmed up a little, take out only the old, weak wood, and do not trim off the ends of the new growth. If the centers of the vines are crowded, and there is any half-dead wood you may take it out, but every bit of good wood cut off now means so many blossoms lost.

Do not trim more than is absolutely necessary the blooming shrubs, such as snowballs, lilacs, mock oranges and deutzias. These shrubs, like the climbing roses, should have been pruned after their natural blooming period. You may, however, trim out any dead wood and cut back any limbs that have grown too far over a pathway or have crowded neighboring plants. But remember when you commence to snip with your shears that every limb of a blossoming shrub that is cut off and thrown away now means so many flowers that will never develop.

Timely Suggestions

Nearly all ornamentals should be pruned now; shape up your arborvitaes and boxwoods; also your borders and hedges. Plant annuals now, and begin to transplant the small plants of stocks, pansy, verbena and salvia.

Divide and replant clumps of Shasta daisy, larkspur, golden glow and golden rod, and by all means plant a good row of each of the latter. Golden glow is very easy to grow, has long stiff stems, and is one of the very best sources of cut flowers in the late summer and fall months.

Roses with bare roots may still be had from the nurserymen and if you are going to need any more roses this season I should advise getting them now, as they will make a much better growth if planted now than they will if planted later.

Care of Evergreens

The best time of all the year for transplanting evergreens is just before the new growth begins; this is in the spring when the moisture and heat starts the sap. Therefore, evergreen planting time is from February to May. Evergreens should be taken up with a ball of dirt and the roots should never be exposed.

Have the hole ready and well soaked with water, but you will not need any fertilizer in the hole. Set in the ball of roots and dirt; see that all the roots have plenty of room and are in their natural position; then fill in around the ball with soil until the hole is two-thirds full. Finally, fill the hole with water. This treatment lets the moisture down to the lowest roots. I sometimes take the tree or shrub and lift it slightly after turning in the water so as to allow the roots to fall into their natural position.

After the roots are well soaked, finish filling up the hole, leaving dry soil on top to prevent baking around the tree. After the tree or shrub is well started you may fertilize around the tree, letting the water carry the extra food down to the roots.

Replies to Questions

"What kind of covering plant would you advise me to use in our back yard? The ground is slightly sloping and washes badly. We also have a bank that we cannot afford to terrace with walls but on which we want to stop the erosion. What would you suggest?"

For the back yard plant lippia. It forms a smooth, regular carpet and will stand any amount of tramping after it has once become well established. But remember you can not get seed. You must get cuttings from some of your friends or secure a box of rooted cuttings from a nurseryman. Have the ground prepared as you would for a regular lawn; plant the lippia in rows and keep watered for a while until it is well started. Then it is well to get a lawn roller and roll the area several times; this not only smoothes the surface, but also presses down the tips of the lippia and promotes spreading and good rooting.

For the bank, plant mesemberanthymum. Get the thick, fleshy leaved kind with a cream colored flower. Plant cuttings and keep them well watered until they are strongly rooted, after which they will require practically no care.

Care of Dahlias

"When is the best time to plant dahlias? Which are the better: Bulbs or rooted cuttings? How can I recognize the good bulbs?"

There is a difference of opinion regarding the best time to plant dahlias. Some of the finest I ever saw were planted on Washington's birthday, and again I have seen beautiful flowers on plants that were set out in June. Rooted cuttings make good plants if they are strong and correctly rooted, but they will not make bulbs unless a bit of the old stalk or bulb is taken with the cutting. If you get rooted cuttings from a reliable nurseryman you will be safe in planting them.

The bulbs that are attached to the stalk are the only ones that are good. When cutting or dividing the bulbs, be careful to look closely for the "eye" at the top. A bulb without an eye like a seed potato is "blind" and consequently worthless.

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, Examiner Building, Los Angeles.

2737-2727—Business Costume

Waist 2737 cut in 7 sizes; 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 2727 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. It will require 2⅝ yards for the waist of 36-inch material, and 2⅛ yards of 48-inch material for the skirt, the width of which is 2¼ yards at the foot with plaits drawn out. Two separate patterns. 10 cents for each pattern.

2710—Child's Dress

Cut in 5 sizes: 6 mos., 1, 2, 3 and 4 years. Size 2 will require 2 yards of 36-inch material. Price 10 cents.

2730—Girl's Dress

Cut in 4 sizes: 4, 6, 8 and 10 years. Size 8 requires 3⅜ yards of 36-inch material. Price 10 cents.

2721—A Simple Day Dress

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Size 38 requires 5½ yards of 36 inch material. Width at lower edge is about 1⅞ yard. Price 10 cents.

2715—A Stylish Dress

Cut in 3 sizes: 16, 18 and 20 years. Size 16 will require 6¼ yards of 27-inch material. The skirt measures about 1⅞ yards. Price 10 cents.

2723—A "Cover All" Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42; and extra large, 44-46 inches bust measure. Size medium will require 5¾ yards of 27-inch material. Price 10 cents.

2349—Girl's Dress

Cut in 4 sizes: 4, 6, 8 and 10 years. Size 8 will require 3½ yards of 36-inch material. Price 10 cents.

2725—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. Size 12 will require 3 yards of 36-inch material. Price 10 cents.

2707—Ladies' House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5¾ yards of 36 inch material. Width at lower edge is about 2⅛ yards. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for our up-to-date spring and summer 1919 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking, also some points for the needleworker, illustrating 30 of the various, simple stitches, all valuable hints for the home dressmaker.

Sunflowers

The Foolish Farm Adviser

(The knottier the problem, the better Solomon Smith likes it.)

"I am planning a barn,"
Announced old Farmer Leigh,
"For my horses and cows,
With a loft for the hay.
But I got a late start,
And the hay's in the field,
All cut, raked and wind-rowed—
A wonderful yield.

"If I stack when it's cured
I must handle it twice
To fill the new loft—
And I haven't the price.
So this is my problem:
To fill up a mow
That is yet to be built.
Now can you tell me how?"

"Simple, quite simple,"
Cried Solomon Smith.
And his plan to explain
He proceeded forthwith.
"Commence work at once,
And if worst comes to worst,
You can start with the ridge-pole,
And BUILD THE MOW FIRST!"
—Justin Nutt.

Uncle Wiseacre Explodes

"Ah, farming is the life," warbled the long-haired boarder from the city as he watched Uncle Wiseacre unhitching his team after a hard day's work in the field.

"Farming is war," Uncle Wiseacre violently contradicted—"war agin bugs, worms, squirrels and varmints; war agin th' weather, th' high cost of livin', and a 10 per cent, self-propelled, double-acting, fire, water and theft-proof mortgage. Farming is war agin fake seedsmen, book agents, hoboes an' panicky money-lenders; agin profiteering middlemen thet don't leave no room on either side. That's what farming is. War! An' you know what Sherman said."

A Fine Distinction

Extract from a thrifty farmer's inventory:

"One hammer to lend; one good hammer."

No Secret

"I made this pie all by myself,"
Said wife with elation.
"I guessed it e'er you told me, dear,
From inside information."

Answer Department

(Ask us anything. We'll guarantee to answer.)

No, Harold, it is not necessary to invest in pruning shears in order to harvest your prune crop.

W. J. B. writes: "My horse collars are cracking badly. Can you suggest some means of saving them?"

That's easy, "W. J." Send them to a different laundry.

In reply to "Desert Farmer," we regret that we can offer no suggestions for the treatment of excessive lathering of horses fed on soap-weed, unless it would be frequent and thorough rinsing.

Don't feed 'em!

OVER two hundred thousand men work from sunrise to sunset every day in the year to feed valuable grain to rats, gophers and other vermin. How many men do you hire to feed grain to rats?

How much of your last year's grain did the rats and vermin spoil? Probably considerably more than even you know about. You lost. The rats "beat you to" some of your deserved profit—they do it each year. They'll do it this season—unless you handle your grain in bulk.

The Calco Metal Grain Bin, for handling your grain in bulk, lasts a great many seasons. It starves the rats and gophers. It enables you to sell your **entire** crop—extra profit from the grain that otherwise would be lost.

Write for the free booklet

The Calco Grain Bin protects your grain from rain, fire and thieves. It's the safe and economic way. Write for the booklet, "Calco Grain Bins." It's full of things to think about. Write for it at once—it's entirely free.

California Corrugated Culvert Company

LOS ANGELES
421 Leroy Street

AMERICAN ARMCO INGOT IRON

BERKELEY
410 Parker Street

CALCO Metal Grain Bin

Great Demand for Raw Furs

You can increase your income this year more than you ever did before by trapping.

Our beautiful 36-page book

"Trapping for Profit"

tells all about trapping and the handling of furs, so that even the beginner can have wonderful success.

This Book and Fur Price List are yours for a postcard; they're absolutely free.

E. R. SKINNER & CO.
1121 FRONT STREET

BEFORE SPRING WORK

Best time to clip is in the spring, when coat is heavy and animal soft. Short hair means healthier pores and prevents sickness. A horse kept in good condition in the spring stands better chance of remaining healthy all year. The best way to clip is with a Stewart No. 1 Ball Bearing Machine, $9.75. Send $2.00, pay balance on arrival, or write for catalog.

CHICAGO FLEXIBLE SHAFT COMPANY,
Dept. 102, 12th St. and Central Ave.,
Chicago, Ill.

Guard your harness against decay

When the natural oils in your harness dry out, decay sets in. Dust, sweat and moisture attack the leather fiber and cause rot. Eureka Harness Oil takes the place of the natural oil and preserves the leather. Keeps harness strong, flexible and jet black. No animal oil in "Eureka"; rats, mice and other rodents dislike it and won't gnaw harness dressed with

EUREKA HARNESS OIL

MADE BY STANDARD OIL COMPANY (CALIFORNIA)

FAGEOL

WALKING TRACTOR

THE Fageol Tractor WALKS over soft or muddy ground just as a team walks—without sinking or miring.

A live axle, with a separate clutch on each wheel, allows quick and short turning.

With positive traction and simple construction the operation is unusually economical.

Tear out this advertisement, write your name on the margin, and mail for Catalog.

BUTLER-VEITCH
INCORPORATED
307 Syndicate Bldg., Oakland, Cal.

Dependability Makes Horseless Farming Possible

Splendid evidence of the "Caterpillar" Tractor's dependability is offered by the fact that so many ranchers place entire reliance upon this tractor for ALL their power needs. Doing away with horses completely, placing entire reliance upon the tractor, is possible only when that tractor can be depended upon to give the same steady service, day after day, month after month.

The "Caterpillar" Tractor not only possesses the dependability that makes unnecessary the keeping of horses for emergency use, but it also possesses the all-around usefulness—the versatility—that adapts it to a wide variety of work.

This dependability and versatility have been achieved by correct design, proper choice of materials and highest grade workmanship. Let us tell you more about the "Caterpillar" Tractor and what it can do to reduce your costs and increase your profits. Send for Folder No. 393.

THE HOLT MANUFACTURING COMPANY

STOCKTON California · PEORIA Illinois · LOS ANGELES California · SPOKANE Washington

CATERPILLAR

Reg. U S Pat Off.

Detection of Frozen Citrus Fruit

The recent cold weather, resulting in more or less serious damage to citrus fruit in nearly all districts, has brought up again many questions which were discussed following the 1913 freeze. After this experience members of the staff of the Citrus Experiment Station made a careful study of the resulting problems and some of the information obtained in their study is summarized in the following catechism:

QUESTION: What are the external indications of frost damage on fruit?

ANSWER: Frosted fruit cannot always be recognized from its external appearance because the inside of the fruit may be injured without causing any change in the appearance of the skin. When injury has been severe, however, the skin of oranges, lemons and grapefruit becomes spotted. These spots are apparent a few days after the freeze and are most abundant on the outside fruit on the north side of the tree. Frozen oranges in sunny places on the tree become pale in color and sometimes flat on the exposed side. This flattening is also common in frozen lemons. Lemons which have been badly frozen have clear watery patches on the skin. These patches soon become black through the growth of fungi.

Internal Indications

QUESTION: What are the internal indications of fruit showing frost damage?

ANSWER: One of the earliest internal indications of frost damage in citrus fruits is the formation of white spots or crystals of hesperidin. In oranges, lemons and grapefruit, these are found on the membranes between the segments. In tangerines where they are very conspicuous they are scattered throughout the pulp. These white spots can be found a few days after the freezing and can best be seen by cutting the fruit transversely and tearing the segments apart.

When frozen oranges are cut transversely they often show a pale area part way between the center of the fruit and the skin. The pulp in frozen lemons is somewhat more opaque than in uninjured fruit. In all varieties the pulp cells of frosted fruit tear apart more easily when cut across than is the case with unfrozen fruit.

A month or so after the freezing, the segments of fruit begin to pull apart because of the drying of the frozen tissue. This condition is best seen in cross-section. It shows first in fruit which was exposed to the morning sun where it may appear ten days after the freezing. Sometimes, especially with fruit inside of the tree, this breaking down may not begin for three months.

QUESTION: Can injury to fruit be judged by injury of foliage?

ANSWER: If the foliage is damaged there is sure to be some fruit injury. If mature foliage shows damage, most of the fruit has been rendered worthless. On the other hand, tender new growth may be frozen without ruining the crop.

The absence of foliage damage does not indicate that the fruit has remained untouched. The entire crop of fruit can be frozen without any foliage damage being apparent.

Determining Damage

QUESTION: How can extent of fruit injury be determined?

ANSWER: Spotting of the skin is a fair early indicator of the amount of damage done to oranges. If none of the fruit is spotted there may be injury, as will be shown by the white hesperidin spots within, but there will be good, marketable fruit in the grove.

If the spotting of north-side oranges is general, most of the fruit will show deterioration within three months. The spotted fruit is worthless.

If the fruit in all parts of the tree is spotted, the crop is unmarketable.

After four or six weeks have passed, sometimes earlier than this, the best way to judge the amount of damage is by cutting fruit from different parts of the tree and from different parts of the grove. Fruit which shows spaces between the septa should be considered worthless. Sometimes the drying out, resulting in the formation of the spaces, is much slower than at other times. Some fruit may remain solid for three months and then begin to break down.

Another means of recognizing frost injured fruit is to pick soon after the freeze a quantity of the fruit that it is desired to test and store in a warm dry place where the temperature is kept continuously at from 80 to 100 degrees F. Sound, good fruit increases in specific gravity by the drying out of the skin, and decreases in volume without much loss from the interior. Frozen fruit, however, rapidly decreases in specific gravity, as the interior juices pass out readily through the skin, and are evaporated without producing much change in volume. Within from 4 to 6 days, therefore, poor fruit can be recognized by the rapid decrease in specific gravity.—H. J. Webber, Director Citrus Experiment Station.

CHRISTMAS COMES BUT ONCE A YEAR

THE small boy says it sorrowfully; his dad with an intonation suspiciously like relief. There are among the readers of Orchard and Farm five who will not have to wait for Christmas in order to receive substantial presents. For on May first, we will distribute the $105 which was set aside last year to furnish prizes for the winners in our Editorial Contest. Will you be one of the lucky five?

ONLY THREE MONTHS MORE TO PARTICIPATE

In the distribution of this money. Scores of our subscribers have sent us accounts of their discoveries and experiments, many of which have been published in Orchard and Farm from time to time. All are being saved, and they will be submitted when the contest closes to a committee of judges from the University of California Agricultural Experiment Station. First prize, $50; second prize, $25; third prize, $15; fourth prize, $10; fifth prize, $5. There is no limit to the number of communications which may be sent by any one subscriber.

SUGGESTIONS TO THOSE ENTERING THE CONTEST

Write briefly and plainly about some farm, orchard, livestock or poultry idea or plan which has been helpful to you in your business. Photographs or drawings appreciated but not required. Mark your communication with the words "For Prize Contest," and give your full name and address. Send the letter to The Editor, Orchard and Farm, Los Angeles, California. Live and let live; help the other fellow; perhaps his suggestion in turn will be a money-maker for you.

A Welcome Guest

IT IS surprising how many farm homes possess complete files of Orchard and Farm. We were very much interested in the recent statement of a visitor to the office who makes a business of visiting California rural homes throughout the State.

"I see Orchard and Farm more than any other paper on California farm library or living room tables," he said. "I think the reasons are plain. Not only does each issue contain a lot of practical, interesting information for the agriculturist, which furnishes instructive reading for a number of evenings, but the housewives preserve each copy, even though they use other journals to start the fires. They like the woman's page, with its helpful suggestions; they pronounce the Orchard and Farm patterns the best that can be obtained anywhere for the money; they enjoy the fine illustrations, the bits of verse, the many features which go to make up the attractiveness of your paper. I believe your statement of policy, as published each month on the editorial page, to be a true expression of the relationship between the magazine and its readers."

ABOUT ADVERTISING

No doubt the facts as outlined by this caller explain to some extent the great pulling power of Orchard and Farm advertising, although the superiority in this respect of the great western farm magazine as attested by the regular volume of business which the paper has enjoyed for forty years, is due largely, of course, to its great and superior circulation.

The subscribers do read the ads eagerly; this we know. It is not surprising, either, when one considers that in order to keep abreast with agricultural progress, one must follow the advertising of those industries catering to the farmer. Yes, I really believe that it is just as important for the wide-awake agriculturist to read the advertisements as the editorial matter. (Is not that quite a concession for an editor to make, Mr. Smith?)

Coming from a disinterested source, or as we might say, from an "outsider," the above survey of the situation by our friend, the traveling man, is especially gratifying. We realize that our success depends upon giving our subscribers MORE THAN THE WORTH OF THEIR MONEY. That we are really doing so is indicated by numbers of testimonials like the following:

WHAT SUBSCRIBERS SAY

"I am very pleased with the paper," writes A. Piatt, a Modesto subscriber, "and consider that I get full value of my year's subscription, and sometimes more, in every issue."

"I simply devour every line in Orchard and Farm," is the enthusiastic statement of Guy E. Hoover of Oakland. "It is the best farm magazine I have ever read."

LUTHER BURBANK

Has prepared another instructive and interesting apple article. Watch for it in the next issue.

The Editor.

Assured Quality Engines

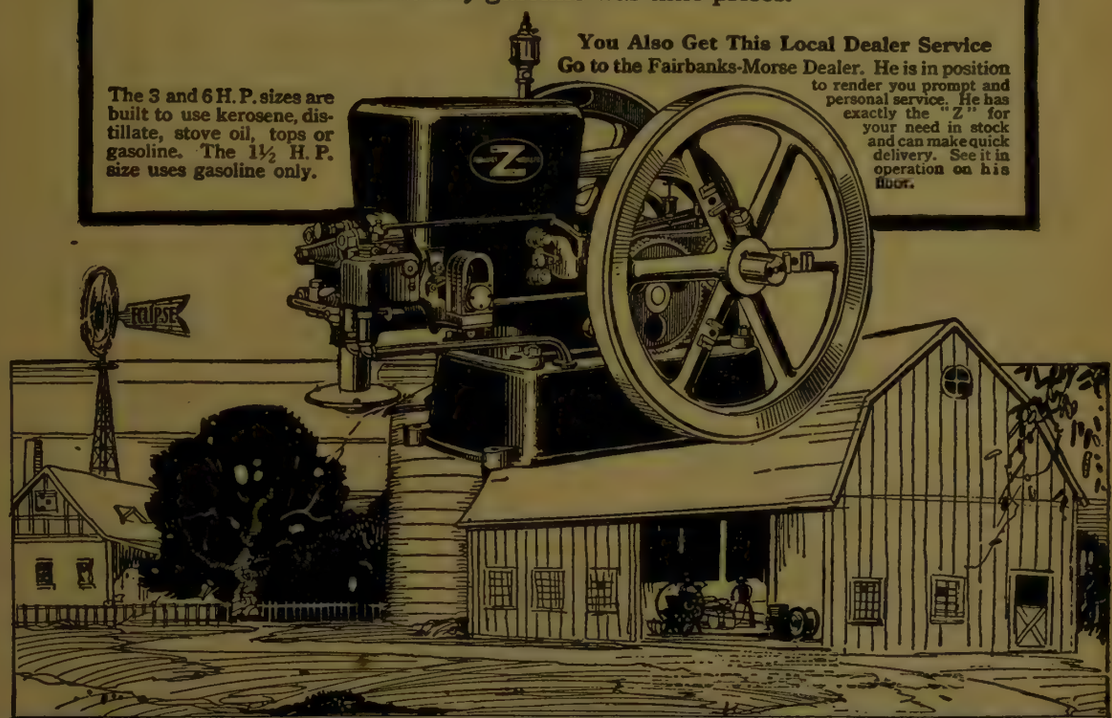
GENERATIONS know that the name-plate "Fairbanks-Morse" on any product assures quality.

This is the famous "Z" engine — all sizes with more than rated power — that over 150,000 farmers have backed with $10,000,000—to do their work best. No farm engine ever before has made such a record.

Cuts fuel costs in two — the 3 and 6 H. P. engines giving more than rated power on *kerosene* at *half* gasoline war-time prices.

You Also Get This Local Dealer Service
Go to the Fairbanks-Morse Dealer. He is in position to render you prompt and personal service. He has exactly the "Z" for your need in stock and can make quick delivery. See it in operation on his floor.

The 3 and 6 H. P. sizes are built to use kerosene, distillate, stove oil, tops or gasoline. The 1½ H. P. size uses gasoline only.



FAIRBANKS, MORSE & CO.
Chicago - *Manufacturers*

Spend 1½ cents, kill one squirrel, and save $1.00 worth of grain.

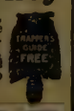
Bunt's Rodent Exterminator kills; non-explosive; no rancher can afford to feed squirrels.

Box 150 exterminators.....$ 3.00
Case 900 exterminators.....13.50

Calif. Chemical Co.
340 Sansome St., San Francisco

Ship Furs!
To the Big House That Pays Big Money

Ship us your muskrat, skunk, coon, mink, rabbit furs, etc., and get your share of the **most money ever paid to American trappers and shippers!** Get correct grading, unlimited market, prompt payment, and highest prices. Don't hoard furs. Ship NOW! Free Trapper's Guide.



Funsten
BROS & COMPANY
International Fur Exchange (3641)
Funsten Building **St. Louis, Mo.**

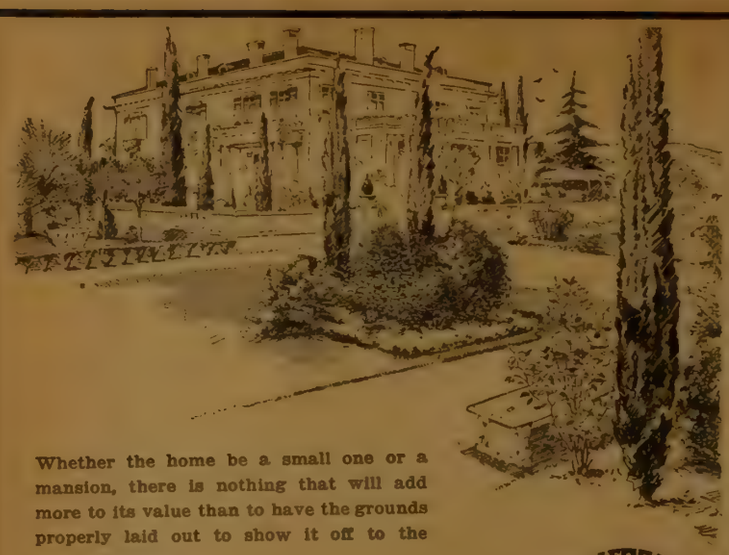
Calf Enemies

WHITE SCOURS BLACKLEG

Your Veterinarian can stamp them out with **Cutter's** Anti-Calf Scour Serum and **Cutter's Germ Free** Blackleg Filtrate and Aggressin, or **Cutter's** Blackleg Pills.

Ask him about them. If he hasn't our literature, write to us for information on these products.

The Cutter Laboratory
Berkeley, Cal., or Chicago, Ill.
"The Laboratory That Knows How"



Whether the home be a small one or a mansion, there is nothing that will add more to its value than to have the grounds properly laid out to show it off to the best advantage.

We shall be glad to have you take advantage of

Our Landscape Department

WE have unequaled facilities for planning and executing landscape effects for the modest home or the large estate, parks, factory and school grounds.

We are recognized as specialists in the propagating of ornamentals. Our ornamental stock has largely contributed to the standing of our nursery in America as foremost in varieties and quantities.

Our fruit orchards for propagating and testing purposes contain more varieties than are assembled in any other one place, and it is from this reliable source that we secure our buds.

Write for Illustrated Price Catalog.

True to name trees, of guaranteed uniform quality, properly grown and carefully packed, are synonymous with the name of our firm.

Established 1885.

California Nursery Co.

P. O. Box 412, Niles, California.

CALIFORNIA NURSERY COMPANY VERIFIED VARIETIES Niles, Cal.

Roses
Plants
Shrubs
Vines
Trees

The Niles Giant Rhubarb, originated by us, stands out preeminently as the best. Stalks two to three inches in diameter — one stalk will make a pie. Shipments extend from early spring until December.

ALFALFA SEED

Common Variety, 23c per lb.
Smooth Peruvian, 30c per lb.
Hairy Peruvian, 40c per lb.

C-E-R-T-I-F-I-E-D S-E-E-D

Delivery to You by Prepaid Freight.
Delay Buying Until You Have Compared My Samples With Seed Others Offer.

E. F. SANGUINETTI
Yuma, Arizona.

Farmers and Fruit Growers, Attention!

Order your Trees NOW from the biggest and best nursery on the Pacific Coast. Reliability counts.

(Fifty years in business—1000 acres in nursery.)

After November 15 we will be shipping every day to California.

PEARS PAY. "Chester Ferguson of Yakima, Washington, realized an average of $2016 per acre for pears this year." PLANT PEARS.

Write for our big descriptive catalogue and prices for trees delivered to your nearest railway station, freight paid.

Agents wanted to represent us in each locality. Address

OREGON NURSERY COMPANY, Crenco, Oregon.

Here's Sweetness and Light!

Probably no project undertaken in recent years by State University authorities has been followed with greater interest than the grape-syrup investigations now being conducted. Apparently those who predicted calamity will be forced to acknowledge another point in favor of prohibition, for it seems that the growers and manufacturers, instead of facing disaster, are about to be introduced to a profitable and useful industry for which they are already equipped.

MORE than 40,000 tons of sugar, of a present value of nearly $8,000,000, can be conserved if the 250,000 tons of wine and table grapes that cannot be used next year in the usual way are made into grape sugar.

This is the conclusion reached by Professors Frederic T. Bioletti and W. V. Cruess of the College of Agriculture of the University of California, after an investigation into the possible utilization of wine and table grapes covering a number of months. A preliminary report of their investigations is published in a bulletin just issued by the University Press.

The Conclusions

About 250,000 tons of wine and table grapes cannot be used next year in the usual way.

This represents a value in raw material of over $4,000,000, and of about twice this amount in the manufactured state.

The loss of these grapes would involve the ruin of thousands of growers.

Investigation has shown that a grape syrup can be made which is wholesome, attractive and suitable for table use, cooking, the making of jams and fruit butters, and for the canning of most of our fruits.

Most of the equipment necessary for making this syrup already exists in the wineries and beet sugar factories of the State and what is lacking could be easily obtained.

Marketing the Syrup

The successful marketing of the syrup depends on finding consumers who are attracted by its quality and price.

To test the possibilities in this respect a quantity of syrup was placed on sale through the co-operation of a grocer. It was put up in pint bottles and tins holding 13½ ounces. These were sold for 20 cents a tin and 25 cents a bottle, a price somewhat higher than that of ordinary cane or corn syrup at the time, but lower than that of good maple syrup.

Purchasers were asked to give their opinion on its quality, and the results were encouraging. Of sixty-five opinions given, 43 were favorable, 18 more or less unfavorable, and 4 noncommittal.

SUMMARY OF OPINIONS

Very good	50
Excellent	20
Good—no unfavorable comment	20
Disliked it—no specific criticism	5
Too sweet	2
Not sweet enough, too thin	6
Tastes cooked, burned, strong	6
Doubtful	4

Less than 8 per cent of those reporting found it without merit. About 25 per cent liked it, but found various defects. The remaining 66 per cent found nothing to criticise and of these more than half praised it highly.

These reports are more favorable than could have been anticipated when we consider that grape syrup differs very considerably in flavor from all the syrups with which most people are familiar. A marked difference in the taste of a common article of food will nearly always give an unfavorable impression even if it is an agreeable difference.

The commonest criticism was that the syrup tasted cooked or burned. This taste, which a few liked, is due in part to the long heating necessary with the type of evaporator used. With the continuous evaporators used in sugar factories it would be diminished or even eliminated.

The marketing of large quantities of this new product could be successfully accomplished only if many fruit canneries could be induced to use a certain quantity of grape syrup during the season of 1920. This could probably be brought about only by suitable governmental regulation.

Cost of Manufacture

Carefully conducted experiments have shown that the syrup can be produced for $1.349 a gallon, this figure representing the actual cost of all manufacturing operations, and including cost of canning and the commission of the retailer. Subtracted from a retail price of $2 a gallon, this amount leaves a balance of 65 cents a gallon. From this balance must be deducted all fixed charges, such as interest on investment, depreciation of equipment, taxes and insurance.

Readers desiring more specific and complete information should write the Director of the College of Agriculture, Berkeley, requesting Bulletin 303, now ready for distribution.

What About the Wine Grapes?

In order that thousands of California grape growers may not be confronted with financial ruin through "dry" legislation, some means of absorbing their product must be devised. University of California experts believe they have discovered the solution of the problem.

Why Not Manufacture Sugar?

New Bulletins

> The Dean says: "A liberal education does not necessarily involve the memorizing of a lot of facts and figures. An important part of education is to know the sources of knowledge. The man who understands where to find information when he needs it receives more practical benefit from his education than the man who has statistics stored in his brain."

AMONG the late publications of the United States Department of Agriculture are a number which are of interest to California farmers. Address the Division of Publications, U. S. D. A., Washington, D. C. These publications will be sent free to anyone who applies.

	Farmers' Bulletin
The Wheat Jointworm and Its Control	1006
Game Laws for 1918	1010
The Soy Bean, Its Culture and Uses	973
Clearing Land	974
Larkspur or Poison Weed	988
Timothy (How to Grow and Handle It)	990
The Use of Machinery in Cutting Corn	992
Harvesting Crops With Livestock	1008
Growing Sugar-Beets in Montana (Of interest to the Pacific Coast beet-grower, who wishes to study the methods used in other sections.)	735
Anthracnose of Cucurbits (Of interest to cucumber and melon growers.)	727

One of the best Farmer's Almanacs that has come to our notice is that recently issued for free distribution by the Armour Fertilizer Works, Chicago. In addition to the usual features, it contains some very good information on up-to-date agricultural subjects, and a number of color plates illustrating different breeds of hogs, sheep and cattle.

Drowning Gophers

A good winter irrigation of alfalfa during cool, cloudy days will just about clear up all the gophers in a field. Irrigation in summer may drown many gophers, but those that get above the ground dry off and are all right in a short time. Those that escape drowning in a winter irrigation, however, are usually so chilled by the wind and cold that they quickly give up the struggle for existence. —Tulare Farmer.

Treating Poultry Diseases

All diseased birds should be isolated.

Colds and Roup—Disinfect the drinking water as follows: To each gallon of water add the quantity of potassium permanganate that will remain on the surface of a dime.

Canker—Sprinkle a little flowers of sulphur in the mouth and throat of the bird and put some chlorate of potash in the water. Also carefully remove the exudate with the aid of warm water and paint with iodine or apply a good disinfectant to the diseased tissue.

Chicken Pox—Apply a touch of iodine to each sore and then cover with carbolated vaseline. If the diseased parts are kept well covered with the vaseline it will usually effect a cure.

Gapes—New ground and vigorous cultivation will often remedy this trouble. A liberal sprinkling of lime around the coops and runs is quite often an effective remedy.

Scaly Legs—Apply vaseline containing a disinfectant to the affected parts, and after 24 hours soak in warm soapy water. Repeat treatment until cured.

Diarrhea in Hens — Low-grade wheat flour or middlings are good for this trouble. Also give each fowl a teaspoonful of castor oil containing five drops of oil of turpentine.

Bowel Trouble in Chicks—Well-boiled rice mixed with a little charcoal will often check this complaint. Dissolve 15 grains of crude catechu in each gallon of drinking water.

Cull out and prepare for market all fowls, old or young, which appear weak, slow or dull; fowls with drooping tails, rough plumage or crow-shaped heads; all scrubs except those which have laying points; all hens which moult early; and all males except those strong, vigorous, and of a pure type desired for breeding.

Twice The Work-Half The Expense

MOLINE UNIVERSAL TRACTOR

"One man and a Moline-Universal Tractor will do about the same work (taking a season through) as two men with four horse teams."— *Crumbaugh Bros., Vandalia, Illinois.*

Statements such as this from Moline-Universal owners—and we have many of them—support our claim that the Moline-Universal enables one man to do twice as much work at about half the expense as is possible with horses.

With a Moline-Universal you can plow 9 acres a day, double disc 27 acres, drill 35 acres, cultivate 15 to 20 acres, mow 25 to 35 acres, and harvest 30 to 35 acres. Figure out for yourself how long this would take you with horses. Then keep in mind that in case of necessity you can work night as well as day, because the Moline-Universal has complete electrical equipment, including electric lights and self-starter.

As for expense it runs about half what the same work with horses would cost.

Charles J. Deck of McArthur, N. D., says: "I plowed 60 acres—fuel amounted to $32.94. It would have cost me $82.40 to plow this with 6 horses, not figuring feed for Sunday, or rainy days. I did not have to get up at 5 o'clock every morning either." Mr. Beck did not consider the saving of his own time.

"If I hadn't had the Moline-Universal I would have kept 4 more horses, which are a bigger expense than the tractor," says J. E. Carey of Wilmington, Ohio.

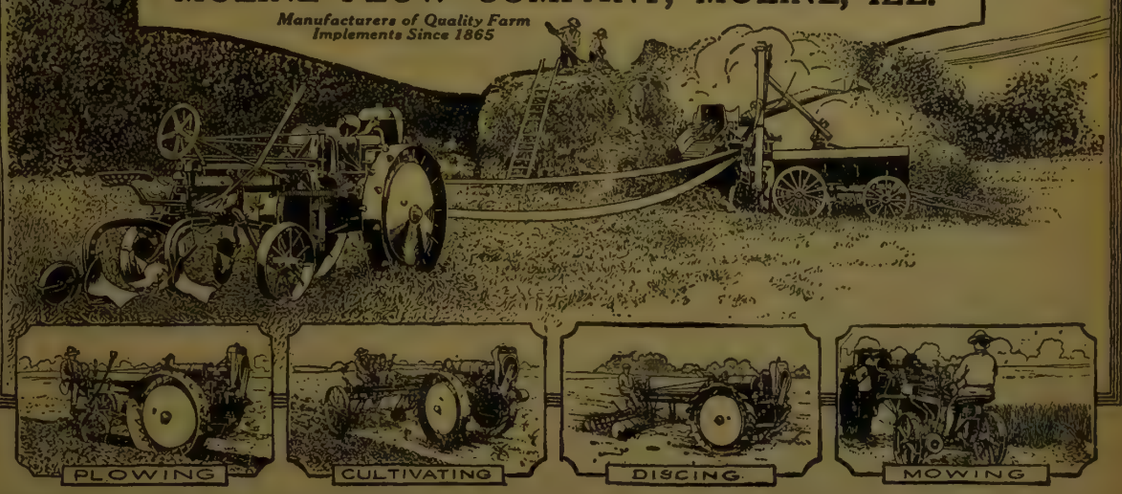
Many other statements similar to this prove that the cost of operating a Moline-Universal Tractor is no greater than maintaining three or four horses, while it will do twice as much work. Then there is another big advantage — belt work. The Moline-Universal has enough power for all ordinary belt power requirements.

"I purchased a 20 x 36 separator and then threshed my grain, pulling it with the Moline Model D. The tractor handled this separator very easily and did fine work. After I had threshed my own grain, I threshed for four of my neighbors, about 350 acres in all." —G. C. Appenzeller, Bouton, Ia.

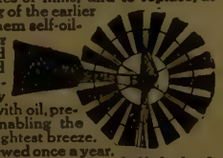
Considered from every angle the Moline-Universal is the best tractor for you. It does all farm work, including cultivating. One man operates both tractor and implement from the seat of the implement. It will make you money. See your Moline dealer now or write us for full information. Address Dept. 48.

MOLINE PLOW COMPANY, MOLINE, ILL.

Manufacturers of Quality Farm Implements Since 1865



THE SELF-OILING WINDMILL has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load. We make Gasoline Engines, Pumps, Tanks, Water Supply Goods and Steel Frame Saws. **Write AERMOTOR CO., 2500 Twelfth St., Chicago**



Hatched 175 Chicks and didn't lose one, writes G. W. Miller of Pittsburg, Okla. Write today to E. J. Roefer, poultry expert, 3742 Poultry Bldg., Kansas City, Mo., for his valuable free poultry book that tells how to make a simple home solution that cures White Diarrhoea over night and saves 98% of every hatch. The book is free. Send for it today, sure.

BUSH CAR—FREE
This Five Passenger 37 H. P. car, 116 in. whl. base. All bearings Timken. Delco Ign.—Dyneto Stg. and Ltg. Write at once for my great Free Offer and 48-page catalog. Agents wanted to drive and demonstrate. Territory open. Prompt shipments. Big money. Cars guaranteed or money back. 1919 cars ready. **BUSH** Address J. H. Bush, President, Dept. B167 MOTOR CO., Bush Temple, Chicago, Illinois

BEFORE SPRING WORK

Best time to clip is in the spring, when coat is heavy and animal soft. Short hair means healthier pores and prevents sickness. A horse kept in good condition in the spring stands better chance of remaining healthy all year. The best way to clip is with a Stewart No. 1 Ball Bearing Machine, $9.75. Send $2.00, pay balance on arrival, or write for catalog.

CHICAGO FLEXIBLE SHAFT COMPANY, Dept. 102, 12th St. and Central Ave., Chicago, Ill.

FREE Examination

CANCER BOOK FREE

Send for this valuable medical book on cancer. Diagnose your own case. It describes in plain, simple language our wonderful bloodless treatment, no knife used, for the cure of Malignant Tumors, Cancer and all lumps in the Breast.

M. F. STERLING, M. D. MGR.
SHIRLEY TREATMENT
253 12th Street Oakland, Calif.

PLANS FOR POULTRY HOUSES
ALL STYLES, 160 ILLUSTRATIONS, SEND 10c. Inland Poultry Journal, Dept. I, Indianapolis, Ind.

Durable-DURHAM Hosiery is not a product of child labor. No person under 14 years is employed. Average working day is 8 hours and 15 minutes. Industrial conditions under supervision of experts trained in U. S. Government courses on employment management.

DURABLE DURHAM HOSIERY Trade Mark

One of the many fine values in Durable-DURHAM Hosiery.

You can see that this hosiery is *strongly* reinforced at points of hardest wear

It is well worth while to know hosiery; to know what brand to buy in order to save money and avoid darning.

Ask your dealer to show you Durable-DURHAM Hosiery. Examine it and you can see the extra reinforcing that means extra wear. You can feel the fine quality of the yarn and notice the careful finish and splendid appearance of the stockings.

DURABLE DURHAM HOSIERY

FOR MEN, WOMEN AND CHILDREN

Made Strongest Where the Wear is Hardest

The tops are amply wide and elastic; legs are full length; sizes are accurately marked; soles and toes are smooth, seamless and even. The Durham dyes prevent fading after wearing or washing. There are styles of Durable-DURHAM Hosiery for every season of the year, for work, dress, play or school.

For coldest weather Durable-DURHAM Fleecy-lined Hosiery is full of warmth and full of wear

Fleecy-lined stockings and socks for women, children and men, strong and good-looking, with soft, warm fleecing.

You should be able to buy Durable-DURHAM Hosiery at any dealer's. *If you do not find it, write to our Sales Offices at 88 Leonard Street, New York, and we will see that you are supplied.* Free Catalog showing all styles mailed on request.

DURHAM HOSIERY MILLS, Durham, N. C.

88 Leonard Street, New York

BANNER

All year wearing stocking. Medium weight. Soft combed yarn, lisle finish. Wide elastic tops. Strongly reinforced heels and toes. Black and white.

Sturges Steel Churns

Easiest to Use and to Keep Clean

Four Sizes: 5, 7, 10 and 15 gallon

Light in weight. Easiest to handle. Best churning results. This all-steel churn cannot soak up moisture and is easy to clean and keep sanitary because it is made of drawn steel heavily tinned and soldered smooth. Will last a lifetime. See them at your dealer's and write for catalog No. 20.

Sturges & Burn Mfg. Co.

Makers of Sturges Guaranteed Capacity Milk Cans

Chicago Illinois

Special Sale Order No. 89 for Feb., 1919, Only, for Our Orchard and Farm Trade.

	Regular Price	Special Sale Price
1 lb. Best Coffee	.35	.25
5 lb. Table Salt	.20	.10
3 lbs. Prunes or Beans	.35	.25
2 lbs. 9 ozs. Long's Syrup	.58	.35
3 8-oz. Cans Tuna Fish	.45	.22
2 Del Monte Sauce	.15	.10
1 2-lb. Can Asparagus	.30	.23
1 lb. Can Crisco	.35	.29
1 lb. Best Tea	.75	.40
9 lb. Bag Best Flour	.72	.58
¼ lb. Royal B. Powder	.17	.13
1 Can Douglas Oil	.40	.29
1 lb. Ambro or Chickory	.25	.15
1 Bot. Lemon or Vanilla Ext.	.10	.09
1 Bot. Mustard	.15	.10
1 Can Salmon	.25	.18
3 Golden Egg Macaroni	.30	.21
3 8-oz. Sliced Pineapple	.45	.25
12 Boxes Safety Matches	.10	.06
6 Bars Good Soap	.36	.29
1 lb. Pearl Tapioca	.17	.14
1 Can Cocoa	.10	.06
A Saving of $2.28	7.00	4.72

The weight of this order is 50 lbs. Sent by parcels post only. Send cash and postage. It may be returned at our expense if not entirely satisfied. For reference we give Orchard and Farm.

DEL MORRIS SALE CO.

2220 Mission, San Francisco.

$673.70 From Half Acre Rhubarb

(675 boxes) first season after planting. Last season averaged $1.15 per box. Limited number plants for sale. Illustrated circular free.

W. A. LEE, Covina, Cal.

GOOD PROFITS TO AGENTS

Cabbage Cutter with 6 Knives

that always keep sharp. Slices cabbage and all other vegetables easily and rapidly. Sent prepaid for $1.00. 3 for $2.00. LUSHER BROS., Elkhart, Ind.

FARMERS CLASSIFIED MARKET PLACE

FIELD SEEDS, GARDEN STOCK

ATTENTION: In order to introduce our Sweet Spanish Onions, we will sell a few pounds of seed in small packages. The onion from this seed is mild and sweet and has no equal. Seed guaranteed. Orders filled as they come in. Packages 30c. Plant December, January or February. Kirkpatrick-Thompson Sweet Spanish Onion Industry of Calif., 667 Eighth street, Riverside, Calif.

LEGUME BACTERIA. Don't Risk Failure! Inoculate Vetch, Alfalfa and all Clovers. Cultures $1.50 each, postpaid (enough for 60 pounds of seed). We are Coast distributors of product of reliable Eastern laboratory. Seeds, too, and seed grains.
RALPH WALDO ELDEN,
Medford, Oregon

HARDY Hybrid Alfalfa. Wonderful Grower. Getting thicker and better with age. Permanent. Quality unexcelled. Write for proof. J. L. Lawson, San Jose, Calif.

STILL a few sacks of Sudan Grass Seed. Honey sorgum and Rhodes Grass. Write for prices and information. Imperial Seed House, El Centro, Cal.

NURSERY TREES AND PLANTS

TREES, TREES—Placintia and Eureka walnuts on black. A general line of high grade nursery stock. A. R. Marshall's Nurseries, 1212 Hoss st., Santa Ana, Cal.

BURBANK'S THORNLESS BLACKBERRY, two year old plants, 25c each, postpaid. Send for our price list of berry plants, all kinds. Rosecroft Nurseries, Sumner, Wash.

Burbank's Thornless Blackberry plants, 25c each. Tips, 5 for $1.00 postpaid. W. H. Glas, Madera, Calif.

SITUATIONS WANTED

Young man, 40, good health, reliable, steady worker, trustworthy, first class mechanic and traction driver, can do all other work, wants steady job on big ranch where he can keep his 10-year-old daughter, too. State location and give details. Address E. W. 100, Gen. Del., Oakland, Cal.

HELP WANTED

WANTED—Experienced Farmer and Rancher to work as Manager of small Ranch in Nevada. Single American preferred. Address Rancher, care Orchard and Farm.

SAFETY RAZOR BLADES

SAFETY RAZOR BLADES RE-EDGED, 30 cents dozen. Send for mailing envelope. Howard's, Box 98, Los Gatos, Cal.

LUMBER—Building Material

"LUMBER, SHINGLES, POSTS sold direct. Karlot Lumber Company, Tacoma, Wash."

Seed Potatoes

We specialize in selected SEED POTATOES; Certified White Rose, American Wonders, British Queens, Burbanks, Garnet Chilis and other varieties. Also fancy, recleaned Alfalfa Seed. Write for prices.

WM. A. CURTIS CO.

San Francisco, Cal.

Fertilize All Crops with Nitrate of Soda

Small quantity per acre will increase your production and income.

Write or call for particulars.

NITRATE AGENCIES COMPANY

Henry Booksin, District Manager

518-519 Bank of San Jose Building

SAN JOSE, CALIFORNIA

FOOD SAVER

Big money-maker for vegetable and fruit growers, farmers, dealers and consumers. This is the best and cheapest saver in the world. Write for further information. Representatives wanted.

SAHARA DRIER CO.,

20 Eighth Street,

SAN FRANCISCO, CALIFORNIA.

Over $100 in Prizes

Don't forget our Contest for Helpful Hints and Farm Experiences. We are receiving many suggestions every month. Write name and address plainly and mark your letter "For Prize Contest." Photographs or diagrams acceptable but not required. "Help the Other Fellow."

REAL ESTATE

$700 DOWN Secures Florida Orange Grove—20 acres, 6 in tillage, wire-fenced pasture, 70 orange, 35 grapefruit trees, also guavas, persimmons, strawberries, etc. Nearly new house, 2 big potatoes, good fishing in nearby lake; poultry and tool houses. Owner making quick change sacrifices fine place, $1700, if taken soon; includes mule, harness, wagon, tools, hog, 25 poultry, some furniture. Details page 66 Strout's Bargain Catalogue, 17 States, copy mailed free. Dept. 781A. E. A. STROUT FARM AGENCY, Heard Bldg., Jacksonville, Fla.

BUY A WALNUT ORCHARD IN OREGON. 128 acres, 93 acres walnuts with apple, peach and prune bearing trees 5, 6, 7, 8 years old; beginning to bear; 15 acres plow land, 20 acres woods. Land rolling mellow clay loam, house, two barns, water piped to house and barns, five springs, fish pond, no irrigation necessary, beautiful view, mile to high school, four miles from station, 40 miles from Salem, forty-one miles from Portland. Price $22,500.00. Terms. J. W. Jenkins, Eugene, Oregon.

FOR SALE—
20 acres, 2-year-old Almond Orchard. This property taken in on an exchange and present owner is selling at a sacrifice. Price, $165.00 per acre. Terms can be had.
NELSON REALTY COMPANY
Pioneer Dealers in Almond Land.
ARBUCKLE, CALIF.
THE HOME OF THE ALMOND

BARGAINS—BARGAINS. Send for free magazine of farms, businesses, wild land, exchanges, any kind, anywhere. Western Sales Agency, Minneapolis, Minn.

WANTED—To hear from owner of good farm for sale; state cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FARMS FOR SALE

FOR SALE—160 acres in Panoche Valley, Calif. No better land than this. Silt soil; grow anything; especially adapted for apricots, prunes, almonds and alfalfa. Water can be had from eighty to ninety feet. $75.00 acre. B. Barahinger, Gilroy, Calif.

A GOOD HOME and a paying business. A practical man with experience and 40 acres of land wants someone with $2,000 to take half the land, go in partnership and help develop a poultry and gardening business. One of the best locations of the kind in California. Thos. Hall, Box 398, Orland, Calif.

FOR SALE—Grain Farm. Two Hundred and Sixty acres; 28 head of Deer. New House, water piped to house. Produced Twenty-five Hundred Bushels wheat of Crops last year. About 70 acres in cultivation. A beautiful home. Price $60.00 per acre. Owner, G. D. Gorup, Purdue, Oregon. Douglas Co.

FARM of 70 acres, 30 fenced, 300 bearing apple trees; free water; free cattle range, on R. F. D. route, 2 miles from school. $1500. Mrs. C. A. Berry, Mokelumne Hill, Cal.

40 ACRES—Good improvements, good soil, water and grass. Fine for berries, vegetables, hogs and cows. H. Koenig, Fort Bragg, Cal.

FARMS WANTED

WANTED—TO hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

WANTED—To hear from owner of good farm for sale. State cash price, full description. D. F. Bush, Minneapolis, Minn.

GOVERNMENT Irrigated Land

FOR ALFALFA, oranges, lemons, prunes, peaches, almonds, walnuts, etc., can be bought on easy terms in tracts from 5 to 40 acres. Literature and information free by the Condon-Realty Co., Orland, Calif.

REAL ESTATE—Sale or Exchange

I HAVE 10 acres of land in Tulare County, Terra Bella District, clear title. I would like to trade on some larger acreage, the ten as first payment. Alfalfa and hog land preferable. J. B. Winters, Box 83, Taft, Calif.

REAL ESTATE FOR EXCHANGE

WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

MEDICAL

THE FAMILY BOOKLET—A treatise on the cause of our diseases; how to foresee and prevent them. This is a scientific and interesting volume in condensed form and will be of great help to the sick as well as to the healthy.
Write now for a free copy to A. A. Guglieri, M. D., Postoffice Box 1299, San Jose, Calif.

COMMERCIAL PRINTING

1000 BUSINESS CARDS for $1; letterheads, envelopes, bills, wedding work, show cards, rubber stamps. ROBERT HILL, 2188 Sutter St. San Francisco.

ASSAYERS AND GOLD BUYERS

GOLD, amalgam, rich ore bought, cash; assaying, 60c. Pioneer Assaying Company, 636 Market street, opposite Palace Hotel, San Francisco, Cal.

PARCEL POST

CO-OPERATION (NOT OPERATED FOR PROFIT) reduces living expenses. Particulars and catalog from Co-Operative League, Commercial street, San Francisco.

HIDES, FURS, PELTS

LENSKY & LOEWEN, WHOLESALE MANUFACTURING furriers; highest prices paid for raw skins. 640 S. BROADWAY, Room 705, 12392, Los Angeles, Cal.

WANTED—AGENTS, SALESMEN.

AGENTS—Mason sold 18 sprayers and auto washers one Saturday; profits $2.50 each; square deal; particulars free. RUSLER COMPANY, Johnstown, Ohio.

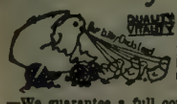
FARMERS CLASSIFIED MARKET PLACE

RATES

Our rate for classified advertisements is 3 cents per word for each insertion. Advertisements must reach us before the 21st of each month. Changes of copy of advertisements running till forbid must be in our hands by the 10th of each month preceding date of issue. Address OREGOND AND FARM, Examiner Building, Los Angeles, Cal.

POULTRY

Our Baby Chicks Lead



WHY?

Because they are properly hatched and handled and we can supply chicks EVERY DAY.

—We guarantee a full count of live chicks at destination on lots of 25 or more.
—Poultry—all breeds. Send for Price List.
—EVERYTHING IN HAIR, FUR AND FEATHERS.
—FANCIERS' EXCHANGE.

640 So. Main Street . Los Angeles, Cal.

BABY chicks for sale—100,000 S. C. White Leghorn chicks from heaviest laying (Hoganized) stock for delivery every month in the year, at very reasonable prices. Safe delivery of all chicks guaranteed. Shipped safely anywhere west of the Rockies. No money in advance; pay on delivery. Finest hatchery in the world. Established 1898. Further information on request.
MUST HATCH INCUBATOR COMPANY,
432 Seventh St., Petaluma, Calif.

FOR SALE—Take advantage of this special offer of a year's subscription to the California Poultry Journal, the leader in California, or a one year's subscription to the Northwest Poultry Journal, the leader in the Northwest, including one year's (new or renewal) subscription to Orchard and Farm for only seventy-five cents, or both poultry journals for one year and Orchard and Farm one year for one dollar. Mail your order today to Orchard and Farm, Los Angeles, Cal.

STRONG, vigorous baby chicks from Hoganized stocks, or hatching eggs from same select breeders. These birds are the result of years of culling out for higher eggs production, with high-type males brought in when needed to perpetuate fine egg ability. Hundreds of well-pleased customers can affirm above statement. Write for prices to JOHN C. BARR, Holyrood Ranch, San Gabriel, Cal.

SLY'S REDS

SINGLE COMB RHODE ISLAND REDS. Some of California's Best. Exhibition quality Hoganized stock. Hatching eggs, $2.00 to $5.00 per setting. Send catalog. ALBERT SLY, 1642 Middleton Place, Los Angeles, Cal.

OUR 200-290 EGG LEGHORNS, ANCONAS, Reds, Rocks, Minorcas, Wyandottes, Orpingtons, ducks clear $5.00 for customers now. Breeders' pullets. CHICKS: Half booked for January, February, March delivery, last year's prices. Many repeat orders. 30,000 capacity hatcheries full now. W. Beeson, Pasadena, Calif.

"EGGS, White Leghorns from 230 to 280-egg hens, mated to corkerels of the 250-280-egg type. Bred for 16 years for vigor, heavy laying and standard requirements. Trapnested and Hoganized. McFarlane and Barron strain. Eggs, $1.50 a setting; $7 per 100. Chicks, $15 per 100. A. Worel, R. F. D. 3, Napa, Calif."

FINEST HATCHERY IN THE WORLD—Baby chicks, Rhode Island Reds and White Leghorns, settings, 100, 1000 hatched right in our 360,000 brick and concrete hatchery from our quality heavy layers; reasonable prices; stock hatching eggs. Pebbleside Poultry Farm, Sunnyvale, Cal.

FOR SALE OF EXCHANGE—If you want to buy, sell or exchange real estate in Los Angeles City or suburban towns or the country, it will pay you to write or call on me, as I have many good places at a sacrifice to offer you right now. HOLLWAY, 1003 Title Insurance Bldg., Los Angeles, Calif.

Anconaland. For Sale—Baby chicks. Booking orders for pure bred Ancona day-old chicks hatched on ranch from our heavy-laying, healthy flock. Hatching eggs from high-scoring hens. Reasonable. Mrs. Crumley, 928 N. Louise St., Glendale, Cal. Successor to W. J. Stone.

FOR SALE—1 acre near Sacramento; 10c jitney, street car; small building, garage; leveled well; nice location for chickens and pigs; price $1200; $500 cash, balance in payments, $10 per month, interest 6%. MRS. C. O. YOUNG, R. F. D. No. 3, Box 10, Sacramento, Calif. No trade.

MAKE capons of your cockerels and double your profit. Heavy breeds make 12-lb. capons. 8 weeks is good age. Caponizing 20c each. Instruments $4.50. Send stamp. Mrs. H. Ament, Capon specialist, Santa Monica, Cal.

BARRED PLYMOUTH ROCKS—Champion prize winners and wonderful layers. Stock for sale—nothing better in poultry than Vodden's Rocks. Catalog free. Vodden's Rookery, Los Gatos, Cal.

FOR SALE—50-acre mint; 16 acres checked; all fenced; good soil; level; 4 miles Oakdale; terms. Write MRS. ERNEST WOOD, Oakdale, Calif. Box 465. Telephone 32J.

HOLLISTER HATCHERY. Baby chicks of quality from selected stock. White Leghorn or Black Minorcas. Prices and terms on application. Box 693, Hollister, Cal. E. W. Kelly.

Brown and Black Leghorn Specialist. Everlasting layers. Persistent winners. Hatching eggs; no stock. Mating list free. C. H. Dickerson, Silverton, Oregon.

"EASTMAN'S BRED-TO-LAY" Hoganized and trapnested Barred Plymouth Rocks. JANUARY chicks. Eggs, cockerels. Fairmead Poultry Farm, Fairmead, Cal.

SPRING CHIX. R. I. Reds, White and Barred Rocks, Buff Orpingtons, Black Minorcas, White and Brown Leghorns. Tobener Hatchery, Route 2, Box 80, San Jose, Cal.

CHIX—Barred and White Rocks, Reds, Orpingtons, Anconas, Minorcas; Buff, White and Brown Leghorns; breeding cockerels. Enoch Crews, Seabright, Cal.

POULTRY

POULTRY GREENS GROWING REVOLUTIONIZED—Dairy, rabbit, even table relish as well, by GIANT MARROW CABBAGE, swiftest winter-growing necessity for Californians. Plant quickly. Has Experiment Station record of EIGHTY EDIBLE TONS PER ACRE. Is earlier, hardier, richer than kale; its tender "marrow" laden, four to seven-inch diametered trunks (sliced) are greedily eaten by all stock without waste. Occasional giants grow 10 feet high. Had 40 inches long, 17 inch wide leaves, stretching up 7 feet, 70 days from transplanting. It never "heads." Oakland customer reports 8-foot specimens with phenomenal leaf yield—the neighborhood marvel. GUARANTEED PEDIGREED SEEDS, 500, 25c; five such packets, $1.00; full acre supply, $3.00 by insured mail. Photos, cultural suggestions FREE.

"Golden Petlatch" or "Big Dinner" bush pea; some 1917 roots bore three crops, "wintering over" in open ground near Canada line. Largest, greenest, tenderest, sweetest grown. Don't "can" them. Ripe seeds thoroughly soaked, cooked, garnished, equal "canned." Large packets, 15c; eight for $1.00.

RAREST BEANS, bush and pole, for Coast planting. A better pole variety than "Kentucky Wonder" or your money back. Packet, 15c, prepaid.

"Purple Perfection Potato;" salad specialty; frost-proof, super-early; demands CONSTANT GROWTH, assuring two crops yearly for Californians without "keeping over" worrying. Seven fine tubers on a single underground fruiting stem this year. One California customer reports the second 1918 crop of four bushels from sample sent in letter. Small sample, 10c; pound, 40c; three pounds insured mail, $1.00.

If it's "Different" PRACTICAL novelty suggestions you want, address E. E. Martin, Guaranteeing Seedsman, B-4, Charleston, Wash. (LIMITED SUPPLIES, NEIGHBOR.)

WELL, WELL—Here the White Plumage Poultry Farm and Hatchery is coming again, ready for another season. Our S. C. White Leghorn breeding stock is better than at any time during our 10 years of breeding. Therefore we can produce better and stronger baby chicks. Why not do your bit and help feed the world? It is none too early to place your order with us today. We guarantee safe delivery. Price, $15 per 100, $70 per 500 and $130 per 1000. H. A. Schlotthauer, Exeter, Calif. Route A, Box 148.

THOROUGHBRED Barred P. Rocks. Egg record 1917, average 190 eggs per hen; 1918, 210 eggs. Limited number settings, December and January $2.50 per 15 eggs. Chicks, March, April and May, 30c each. Cockerels $5.00 up. Warren Poultry Yards. Phone 5599, 36 Little Delmas ave., San Jose, Calif.

FOR SALE—We guarantee full count of live chicks that will please you. We hatch from heavy layers selected by the Hogan system. Thoroughbred White Leghorns exclusively. Reasonable prices. Write for price list and book your order early. White Leghorn Hatchery Co., Pomona, Calif.

SILVER CAMPINES—The hens that lay the large white eggs and lots of them. We have as good a strain as can be had at $3.00 for setting of 15 eggs. Also chicks from heavy laying strain of White Leghorns at $12.50 per hundred. Oak Knoll Ranch, T. E. Blake, Prop., Santa Cruz, Calif.

BABY CHIX. R. I. Reds my specialty. The best pays. Bred for eggs, color, size. Hens on free range. January deliveries 17c each, 16c in 1000 lots. Denton Poultry Yards, Box 300, Campbell, Calif.

BABY CHICKS—Hatches every week. Order early and get the date you want. White and Brown Leghorns, Black Minorcas, R. I. Reds, Barred Rocks. Safe arrival guaranteed. Write for circular. Stubbe Poultry Ranch and Hatchery, Palo Alto, Cal.

S. C. RHODE ISLAND Red hatching eggs from our prize winning, heavy laying, Hoganized stock. Winners at the big San Jose show. Write for particulars. Ward's Poultry Farm, 39 So. Lincoln, San Jose, Cal.

HEALTHY WHITE LEGHORN chicks or eggs from strong, vigorous, heavy laying 2-year-old hens mated to Hogan cockerels. Eggs, $7 per 100. February chicks, $17.00 per 100; March and April, $16.00. Wheeler Poultry Ranch, Monrovia, R. F. D. 1, Box 73-D.

BABY CHICKS AND EGGS—Hoganized White Leghorns, utility Rhode Island Reds and Barred Plymouth Rocks our specialty; also choice Anconas and Blue Andalusians. Free circular. McDonald Poultry Ranch, Route 1, Box 246, San Jose, California.

BUFF ORPINGTON EGGS $2.50 Runner Duck eggs, $1.50. September hatch of Buff Orpingtons and Rhode Island Red pullets, $2.50 each. Crating extra. Heavy laying strains. "Glendale," Box 249, Route B, San Jose, Calif.

BLUE ANDALUSIAN eggs from laying and winning strain. Better show record than ever. Write for circular. J. R. Huddleston, 342 Edgeware Road, Los Angeles, Cal.

CHICKS OR EGGS—Hoganized White and Buff Leghorns; Buff Monorcas (also cockerels), B. P. Rocks, L. Brahmas Reds. S. Martina, R 2, 627, Santa Cruz, Cal.

WHITE WYANDOTTES—EGGS FOR HATCHING from our heavy-laying, prize-winning stock. BABY CHIX; COCKERELS. R. W. Stawetski, Route B, San Jose, Cal.

CHICKS and hatching eggs from heaviest laying, scientifically line bred, Hoganized White Leghorns on the coast. Circular free. Waldeck Ranch, Burbank, Cal.

BABY CHICKS—Hatched from our own stock in our own hatchery. Hens are of S. C. W. L. utility stock, bred for commercial laying. H. A. George, R. D. 2, No. 29, Petaluma, Calif.

BABY CHICKS (White Leghorns)—Shipped on approval before remitting. No weak ones charged for. Schelville Hatchery, Schelville, Cal.

WEBSTER, WEBSTER & BLEWETT, Savings and Loan Bldg., Stockton, California. Established 50 years. Send for free book on patents.

FREE BOOK, "CHICKENS FROM SHELL TO MARKET," on application. Coulson Company, Petaluma, Calif.

FOR SALE—Thoroughbred Rhode Island Red cockerels, from heavy laying stock. R. F. Ramelli, Vinton, Calif.

For Sale—Blue Ribbon Seed Corn. The Prolific White Dent. Write for particulars. S. Harvey, Walnut Creek, Calif.

Eggs From Beautiful Blue Orpingtons. Prize Stock. $3 for 15. Mrs. Gus Maehl, 1220 McCadden, Hollywood, Cal.

Thoroughbred Buff Orpington eggs from heavy-laying stock; settings, $1.50. Mrs. M. Lopez, Lathrop, Calif.

POULTRY

White and Brown Leghorn Chicks, guaranteed strong and vigorous, and bred for large egg production. Thoroughbred stock. Price $14.00 per 100; reduction by the 1000. Eggs, $1.75 per setting. Stock for sale.

I use and sell Pioneer Incubators and Brooders. There are no better machines made. Prices reasonable. Write for particulars.

JAMES D. YATES,
Poultry Judge,
Modesto, Cal.

TURKEYS

FOR SALE—Golden Bronze turkeys. Big bones breeding toms of America's best strain. Eggs in season. M. M. Reiman, Planada, Calif.

FOR SALE—Giant Bronze Turkey eggs, 35c each; Hoganized White Leghorn Roosters, $5.00 each. No. 27, Shawmut, Calif.

RABBITS AND PIGEONS

RAISE RABBITS FOR US—We have 117 raisers at the present time in this State; we want 500; we furnish you with original breeders and then buy back all that you can raise, paying $2.00 to $3.00 each for them. Our plan is absolutely on the square. Write today inclosing 25c for our book on rabbit culture, our 20-page catalogue and our raising proposition in full. The GILMORE RABBIT FARM, SANTA BARBARA, Cal.

"RICHEY'S Western Rabbit and Cavy Book," devoted entirely to the rabbit business. Price 50c. "Making a Living on an Acre" and Care of Rabbits, Pigeons, Ducks, Pheasants, etc. Price 25c. "Richey's Fur Rabbit Guide," devoted to furs, canning, making, etc. Beautifully illustrated. 50c. Mrs. C. A. Richey, 616 N. Benton Way, Los Angeles, Cal.

Caldwell's Reliable Rabbit Remedies. Ear Remedy, 35c; Slobber Remedy, 35c; Vent Remedy, 35c; Rabbit Tonic, 65c; Buck Tonic, 75c; Snuffle Remedy, 75c. Prepaid. Free circular. Agents wanted. Caldwell Rabbit Farm, Lock Box 274, Main office, Los Angeles, Calif.

NEW ZEALAND REDS—Pedigreed, none finer, richly colored, four red feet and creamy bellies. Three, five and seven months old. E. Kelly, 334 Main st., Petaluma, Cal.

ARMSTRONG'S New Zealand Red Rabbits; improve your stock with a good, healthy buck, pedigreed and registered. Prices right. ARMSTRONG'S RABBIT YARDS, Petaluma, Cal.

RABBITS—Choice young New Zealand Red breeding stock for sale. R. C. Specht, Route A, Sonoma, Calif.

DR. B. HEARN, Veterinarian, breeder of New Zealand Red and Flemish Giant rabbits. R. R. 2, Porterville, Cal.

MONEY IN RABBITS—Raise rabbits for us. Will pay $6 per pair. Send stamp for reply. H. E. Gibson Co., Arcadia, Cal.

NEW ZEALAND REDS, pedigreed and utility fine stock. Write for prices. C. L. Reynolds, Scotia, Calif.

FOR SALE—Rabbits, New Zealand and Flemish Giant. Paul Kruger, Watsonville, California.

MISCELLANEOUS—FOR SALE

New Model No. 15-K

Do You Iron Today? If so, keep cool. Use the Imperial self-heating Iron. Makes its own gas, generated from kerosene. The cheapest and best iron made. Cole Lite & Sales Co., Lamp Dept., 1216 to 1220 E. 41st st., Los Angeles, Cal. Demonstration room, 246 S. Spring St.

I WILL deliver by express one box lemons containing 45 to 48 for $1.00. One box oranges containing 24 to 36 for $1.25. One 8-lb. sack walnuts for $2.50; one 8-lb. sack almonds for $3.00; one 10-lb sack beans, limas, pinks or navy, for $1.50; one box apples for $1.00. If parcel post, 3rd zone or over, add 35c. Ernest Vince, Santa Barbara, Cal.

"OREGON APPLES" from the Famous Rogue River Valley. I will deliver a quarter bushel carton of perfect Yellow Newton Pippin Apples anywhere in United States for $1.50. This is a perfect product primarily packed for particular people. E. F. Guthrie, Medford, Oregon.

A. LEVIN, successor to Kelly Machinery Co. All kinds and sizes of Pipe, Engines, Boilers, Pulleys, Shafting, etc. Good second-hand Wire Rope, Manila Rope and Barb Wire. 524 Mission Road, Los Angeles.

MISCELLANEOUS—Wanted

WANTED—Homes for James, aged 8, medium complexion, quiet, attractive; Harold, 10, blond, musical; Emil, 11, healthy, handsome, intelligent; Irving, 11, the Ad Club mascot for 1919, honorable, nice looking, bright. Apply Children's Home Society, 2414 Griffith Ave., Los Angeles, Cal.

PATENT ATTORNEYS

HAZARD & MILLER, ATTORNEYS AT LAW—Patents and Patent Causes. Henry T. Hazard established the agency in 1878, which has been uninterruptedly in business since that time. Herman Miller, eight years examiner in U. S. Patent Office. Our library contains the record of every U. S. patent. Examination without charge. HAZARD'S 1918 BOOK ON PATENTS FREE. 504-505-506 Central Building, Sixth and Main streets, Los Angeles.

SEND FOR FREE BOOKLET "All About Patents and Their Cost." Shepherd & Campbell, Patent Attorneys, 734K 8th st., Washington, D. C.

LIVESTOCK—Chester Whites

THE "BILLIKEN BRAND" OF CHESTER WHITES. Time to breed for spring litters. If you want some good growth spring pigs, you need one of my boars; have only 3 yearling boars left to offer. Have only 6 bred gilts left for December delivery. These are bred for March farrows. A few weaned fall pigs, both sexes. Raise better stock, you can do so by using the "Billiken" Chester Whites. C. B. Cunningham, Mills, Cal.

THE "BILLIKEN BRAND" of CHESTER WHITES. For February delivery a few 1917 fall gilts that are bred for an early April farrow. A very few 1918 fall pigs, both sexes. Everything cholera immune. Will book orders now for weaned pigs that will be farrowed during March. C. B. Cunningham, Mills, Cal.

LIVESTOCK—Sheep, Milch Goats

D. E. KELLIHER—Importer and breeder of Hampshire sheep, Eugene, California, offers for sale a choice lot of yearling Hampshire rams sired by Walnut Hall and Butterfield rams purchased at Salt Lake August, 1916. Inspection and correspondence invited.

LIVESTOCK—Duroc Jerseys

START right. Registered Duroc Jersey weanlings. Three for $35. Satisfaction Guaranteed. Red Rock Ranch, Glen Ellen, Cal.

DUROC-JERSEY hogs; weanlings of either sex ready for immediate delivery. Breeding and satisfaction guaranteed. H. E. Boudier, Napa, Calif.

LIVESTOCK—Berkshires

FOR REAL GOOD BERKSHIRES write Frank B. Anderson, Box 724, Sacramento, Cal.

LIVESTOCK

NOTICE TO STOCK OWNERS
USE "Forcine" to build up a run-down animal. Thousands of satisfied customers. Guaranteed or money refunded. $1.25 prepaid; circular on request. Charles Tener, Box 434, Poughkeepsie, N. Y.

"RAISING Calves Without Milk." Send for free booklet telling how to do it. Coulson Company, Petaluma, Calif.

REGISTERED O. I. C. swine; breeding stock for sale. C. I. Ballard, Rickreall, Ore.

AUTO TRAILERS

AUTO ACCESSORIES, SUPPLIES

FORDS START EASY IN COLD WEATHER with our new 1919 carburetors; 34 miles per gallon; use cheapest gasoline, distillate or half kerosene; increased power; styles for any motor; very slow on high. Attach it yourself. BIG profits to agents. Money back guarantee; 30 days' trial. Air-Friction Carburetor Co., 335 Madison, Dayton, Ohio.

AGRICULTURAL IMPLEMENTS

THE best, cheapest and quickest way to clear land is to attach our Power Stump Puller and Plier to your gasoline engine. It clears the land in a jiffy and you can also attach a scraper and level the land ready for planting. Any gasoline engine four horse power or larger does the trick. Send for circular and prices.
U. S. IRON WORKS, SEATTLE, WASH.

IMPLEMENTS AND RANCH SUPPLIES, SAMPLES and slightly used. Four floors. Large stock. Liberal credit. Save 50 per cent on some. No branches.
ARNOTT & COMPANY, INC.
The Yellow Front. Established 1892.
112-118 South Los Angeles St.
Los Angeles, Cal.

TRANSFORMERS—Only transformer factory on Coast building complete line of transformers for all purposes. Gardner Transformers sold under positive guarantee as to serviceability. Deliveries unequaled. Special attention paid to farm and irrigation orders. GARDNER ELECTRIC MFG. CO., EMERYVILLE, CAL.

IDEAL HOIST FOR UNLOADING HAY, driving fence posts, stretching fences, erecting buildings, clearing land, road, buildings and numerous other purposes. Inexpensive; great labor saver. Send for circular. U. S. Iron Works, Seattle, Wash.

CATERPILLAR "30" TRACTOR, complete; used short time. International Mogul 60, $1400. Bargains. Ira E. Brown, Montague, California.

ENGINES

NEW PRICES ON KEROSENE ENGINES
Those who are thinking of buying a farm engine will be interested in latest prices on the WITTE—the better quality engine—longest on the market, easiest to use, fuel saving, reliable. As usual the WITTE factory offers the most favorable prices to the customer, and now as before the war, and during the war, buyers can buy on practically their own terms. Every WITTE engine—gasoline or kerosene—is sold on a valid 5-year guarantee, backed by the largest exclusive engine factory in the world, selling direct to user. A handsome new engine catalog, and big illustrated folder, showing what WITTE users are doing, together with latest prices, mailed free on request. WITTE ENGINE WORKS, 3122 Oakland Ave., Kansas City, Mo. 3122 Empire Bldg., Pittsburgh, Pa.

SEVERAL NEW AND SLIGHTLY USED ENGINES. ARNOTT & CO., Implements, 112 South Los Angeles st., Los Angeles.

The RIGHT START

—that's the big thing!

Yes—and come to think of it—the right start is *everything!* For it is in the first few weeks that these baby chicks lay the foundation of their lives—of their future egg production—*of your very profits!*

Baby chicks are little bits of life but, at the same time, each one represents a whole chicken. That's why it is profitable to save every one.

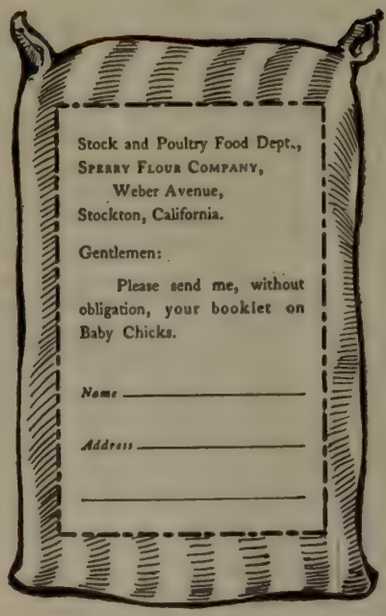
It is here that Sperry Baby Chick Feed comes as a signal help. For it supplies *all* the food values that Nature intended a growing chick to have.

No matter what your methods may be—you can depend on Sperry Baby Chick Feed to produce results. Why? Because it is prepared by experts to meet the demands of fast-growing bodies. It is clean, uniform, properly granulated and proportioned for the delicate organs of the baby chick.

Also—remember this: Sperry Baby Chick Feed is *absolutely gritless.* You don't have to pay a fancy price for shell and grit. (You should, however, add about 5% fine shell and grit, when using.)

Sperry Baby Chick Feed is a perfectly mixed ration based on the *practical findings* of the most successful poultry raisers. That's why chicken raisers are so enthusiastic about it! That's why professional poultrymen are making money by using it! And so can you!

The new edition of our booklet, "Makes Hens Happy", explains just how to feed baby chicks—gives you the advice of practical poultry experts—tells you how to boost your poultry-profits. No one knows so much about the poultry business that he can afford to overlook the big money-saving and money-making suggestions to be found in this booklet. Your copy is waiting for you—and it's *free!* Simply fill in the coupon—and mail TODAY!



STOCK AND POULTRY FOOD DEPARTMENT

SPERRY FLOUR CO.

STOCKTON, CALIFORNIA

SPERRY Baby Chick Feed

"A Sperry Product"

March, 1919

Luther Burbank Reveals Plant-Breeding Secrets

10c Per Copy

ORCHARD and FARM

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Make Your Car Help

America is asking for a Victory Harvest this year.

Every country's short of everything. You never had such an eager market. Every additional bushel you can make your fields produce means just that much more in the bank for you.

Make your car help. Think of the time, energy and good, hard cash it will save for you! Think of the speed it will put into those trips to town.

Its dependable service means a lot to you.

And there's no such thing unless you give it good tires to travel on.

There's a United States Sales and Service Depot dealer in the nearest town. He will gladly point out the proper United States Tires for you. For the line of United States Tires includes tires to meet any possible need.

There are five different types for passenger cars as well as both pneumatic and solid tires for trucks. They're all good tires—the best our seventy-six years in the rubber business have taught us to make.

Once you discover what they mean to your car—their wonderful dependability, their real goodness—you'll stick to United States Tires just as tens of thousands of other farmers are doing right now.

Try it and see. Ask our Sales and Service Depot to help you.

United States Tires are Good Tires

ORCHARD and FARM

VOL. XXXI. MARCH, 1919 NO. 3

Arizona's Future

UNDREAMED-OF possibilities for greater agricultural development exist in the wonderful Southwest. Secretary Lane's plan for the undertaking of new and tremendous Government reclamation projects in connection with the return of our soldiers and sailors brought to light staggering figures dealing with potential resources.

It seems strange that, in view of the benefits which great irrigation projects must bring to the people of this section, the work should be impeded by lack of adequate water laws; yet this is just the situation existing in Arizona. While the slow Federal machinery is grinding out plans and proposals, development work on a smaller but still gigantic scale might well be going on through the application of private or even State capital. Yet even this work is at a standstill.

Interesting statistics dealing with the development and production of existing irrigation districts are furnished by G. E. P. Smith, professor of irrigation engineering, University of Arizona.

The Salt River project has furnished water for 205,616 acres, and the crop report for the year indicates a production on the farms of not less than $18,000,000, in addition to a livestock production of comparable value. Of the irrigation water supplied to the farms this year, a little more than 75 per cent had been conserved from loss by storage in the Roosevelt Reservoir and a little over 60 per cent had been stored in the reservoir since 1915.

Without the reservoir, not more than one-half of the above area could have received any water at all; the yields, moreover, would have been low, and the crop value not over one-fourth the amount given above. The past two years have been drouth years, and from Texas to Oregon the water shortage has been felt keenly, but in the Salt River Valley there was no shortage. Each farmer decided how much water he wanted and when he wanted it, put in his order and received it at once.

In this valley, as well as in the Yuma Valley, the total cost of construction of the projects assessed by the Reclamation Service upon the land owners has been exceeded by the new wealth thereby created during the present year alone.

"No governmental undertaking, State or Federal, at the present time offers as great returns as the reclamation of arid lands under projects similar to those in the Salt River and Yuma Valleys," said Professor Smith recently.

"Arizona has extensive areas of agricultural land which can be watered by means of storage projects. There are excellent reservoir sites on the Colorado, the Little Colorado, the Verde and the Gila Rivers, which should be utilized, and will be at some future time. When the needed legislation is secured it will be possible to enlist private and public capital to carry out these important undertakings."

When the Farmer Is Up in the Air

By George Greenfeld

A PASSENGER service by airplane has been established between London and Paris. A giant machine carrying 30 persons makes the round trip between breakfast and dinner and allows four hours in either city to transact business.

A trans-continental airplane flight from the Pacific to the Atlantic was recently completed by a group of U. S. Army Aviators.

The navy has a big new flying boat that carries fifty people.

An airplane has just been manufactured which will make a non-stop flight from New York to Chicago.

We could continue thus and fill pages with the achievements of modern aircraft. What does it all mean? Simply this: That the era of the air is at hand and that exploitation in the field of industrial and commercial aviation henceforth will be practically limitless.

The First Achievement

The airplane will undoubtedly first make itself felt in peacetime affairs through the medium of the air-mail service. At the present time, the entire fleet of postal planes owned by the United States Post Office numbers only six "ships," as they are called in the language of the aviator. These six are medium-sized planes, specially designed and built for mail service by one of our large airplane makers, the Standard Aircraft Corporation of New Jersey. They carry the air-mail daily between New York, Philadelphia and Washington. The record made by these ships proves conclusively that when an airplane is built for stability and not for fighting qualities, it is as reliable as an automobile or motor truck or locomotive.

Over four hundred flights were made by the postal fleet up to December 1, 1918, when the latest official figures were issued. Only nine of these flights were interrupted in any way. Imagine an automobile making four hundred trips of an equal length and being brought to a halt only nine times by tire trouble or any other cause. Or imagine a train making four hundred trips and being stopped only nine times by signals, wrecks, track trouble and all other causes combined. None of the nine stops was serious. Most of them amounted to only a few minutes, and none of them vitally affected the total time required to deliver the mail.

Development Planned

Encouraged by this remarkable showing, the Post Office Department has announced that it will establish other air-lines as rapidly as the situation permits. While the army and navy require aircraft all other needs must be put aside. But as soon as possible, the post office will secure its share of machines, and air-lines will be established until the whole country is covered with their network. This will mean that cities and towns which were formerly many hours, and even days, apart will be brought within a few hours of one another.

At the very first, the planes may be only large enough to carry a thousand pounds or so, but almost immediately, larger planes will be built which will have a carrying capacity of several tons. When these larger ships become general, much of the perishable farm produce will be carried by them. Mr. Herbert Hoover recently called attention to the fact that one-third of all the perishable farm produce is ruined before it can be used, and he blames our slow methods of transportation for this state of affairs that is costing the country hundreds of millions of dollars each year. The airplane is the solution of the problem. It is the means that will eliminate this terrible waste. The farmer will bring his produce to town as at present, and from there it will be carried to its ultimate market by airplanes. This will be the first step.

A Mail-Carrying Airplane.

Of the type now in regular use on Eastern aerial routes. Machines of this design have conclusively demonstrated by actual test their superior speed and dependability as compared with train and automobile transportation.

THE FARMER'S OWN PLANE

The next step will be to carry the produce from the farm to the town in a smaller but equally speedy airplane. It will be, I feel sure, only a short time before this is an accomplished fact. Already the makers of the mail-carrying planes have announced a small airplane suitable for this purpose. It is only twelve feet in spread; is equipped with an ordinary motorcycle motor; can be built at a price to compete with the average-priced automobile found on the farm today; and yet it will fly easily 80 to 100 miles an hour and is so stable it has actually been flown without passenger or pilot (the plane being set so that the ship spiraled into the clouds and when the gas was exhausted returned to earth).

It is a plane of this general type that the farmer will use for his individual needs. Almost every farm could provide a landing field big enough for it; it could be kept in the barn or garage; original and maintenance cost would both be reasonable.

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The Better Way

"GIVE me a fifty-dollar bond; I just sold my pigs."

The proudest boy in Average County was speaking. He was transacting important and patriotic business with his own money and, even though he could scarcely see above the counter at the bank-teller's window, he was as big as any man in the place.

"My pigs; my calf; my corn; my club"—these words in the mouths of thousands of rural boys and girls throughout the land mark the arrival of the greatest epoch in our agricultural progress. Education of adults is a slow process at best; yet education is recognized as the basis of greater production and better living. The brakes were removed from the forward movement of America's greatest industry when educators came to the realization that not only a latent source of tremendous productive power but the very future of our national welfare lay in the hands of our rural boys and girls.

That such a tremendous force, yet one so easily directed, should have been allowed so long to remain unrecognized, is but one of the revelations arising from the great war. The farm-to-the-city movement was checked; better citizenship assured; unlimited possibilities uncovered, when the first boys' pig club was organized. From that beginning has grown in a few years a complete revolution in rural education. For a means has been found of interesting the farm boy and girl in useful, productive endeavor—even during the vacation periods which have always afforded the incentive to mischief-making that goes hand-in-hand with idleness.

The movement is spreading and expanding. The latest development is the "bum lamb" club. There was a time when coyotes found easy picking in the wake of the migratory bands of ewes and lambs. After months of hunting such high-geared prey as the jack rabbit, the coyote undoubtedly heralded the coming of the flocks to the spring range as the dawn of his millennium. Now all is changed; not that the lambs do not drop out as of old, but the coyote is forestalled by a tireless lad who seems to be always on the job and who pounces upon the wobbly derelict, stuffs him into a gunny sack, and takes him home to rear on the bottle.

Let us, by all means, encourage the organization and development of these livestock, grain-growing, and canning clubs. No parent can afford to ignore the object lesson of past accomplishments. No rural youngster should be denied the benefits of this wonderful movement. Many a country boy has left the farm because "his calf became his father's cow." Many a country girl is struggling in the city because she "had to do" work which thousands of farm girls now perform enthusiastically because their interest has been aroused. Have you a dissatisfied or unmanageable boy or girl? Try the club idea!

First Aid for Sick Machinery

A CERTAIN farm equipment dealer has one record customer who buys a new mower every two years, and who at one time was in debt for three machines which he purchased in a period of six years. This farmer uses an apple tree as a shelter for his grain harvester. When one tree dies he plants another. And although he and his family work hard, he is always paying last season's debts with next year's income. Why isn't he successful?

If the agricultural implements which have rusted and rotted to pieces in fence corners and barnyards could be placed end to end, they would probably stretch from here to infinitum. Approximately $100,000,000 constitutes the annual loss due to lack of care in handling farm machinery—a tribute to catch-as-catch-can methods. The average farmer will sit up all night to save the life of a day-old calf or a litter of pigs and think nothing of it; yet the same man will begrudge the time and labor necessary to haul valuable tools from the fields to proper shelters. Why is it? Here's a puzzle for all of us to solve!

Conservation of Farm Tools

The present is an opportune time, if you have not already done so, for taking inventory of farm machinery resources, as well as account of essential repairs and record of implement condition. Repairs should be ordered and put in place as soon as received. Machines should be gone over thoroughly and prepared for the coming season. All adjustments should be made, a plentiful supply of various sized bolts, nuts and screws should be secured and everything got in shipshape order for the rush season of spring work. Indications are that prices will not be lowered on this class of supplies before next season.

A few spare hours can be devoted advantageously to the collection of old implement parts, repairs and scrap iron which have accumulated in the fence corners and lanes, as the present values of scrap and junk justify the farmer in selling such material, which is valuable for industrial purposes.

Now is the time, also, to sharpen plow points and disks and to touch up the dull harrow teeth. The cultivator shovels should be sharpened, as blunt points and worn harrow teeth are highly inefficient and will not perform satisfactory work. All worn parts should be replaced and the machines placed in A1 condition for field service. In spike-tooth harrows, teeth should be reversed in the clamps if worn only on one side, while if both points are dull, they should be removed and reshapened by forging and retempering. Spring-tooth harrow teeth should be handled similarly, while the discs or disc harrows should be edged. Mowers, reapers, and binders should be overhauled and put in order for a strenuous campaign. (The United States Department of Agriculture offers valuable information in Farmers' Bulletins 946, 947, 948 and 991, "Care and Repair of Farm Implements," which every American farmer should read. It will pay you to send for them. Address Division of Publications, U. S. D. A., Washington, D. C.)

Providing Proper Repairs

A careful and systematic inspection of each implement should be made for the purpose of making or ordering repairs. Plows, listers, harrows, rollers, drags, seeders, drills, planters, cultivators, mowers, binders, headers, hay rakes, hay loaders, stackers, wagons, racks, engines and horsepower or belt-driven machines such as separators, silo cutters and feed grinders are the implements in most common use. It is suggested that each implement be inspected for badly worn or broken parts to determine what parts should be repaired and those that must be replaced with new ones.

As a reminder for ordering new parts and in overhauling the machine, make a list for each implement of the parts to be repaired or the new parts to be bought; also any special tools necessary in making these repairs.

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New Income Tax Information

THOUSANDS of farmers this year are required to pay an income tax. The year 1918 was a prosperous one, and every man and woman in the United States who shared in that prosperity is called upon to contribute his share to the cost of a war that has brought us peace and victory. The man who thinks the income tax a hardship should picture to himself the conditions had victory been on the other side. Instead of paying to his own Government a proportionate percentage of his income, he would pay to the German empire an indemnity, beside which his income tax would appear as a minor item.

Last year the people of the United States paid an income tax to insure their income. This year the income tax is a victory tax, but the cost in dollars of that victory is yet to be met.

This Is the Second Intercrop

Growing in this orchard in one season. Although they followed early potatoes, the beans illustrated produced a heavy crop.

(See Article on Opposite Page)

Upon the Bureau of Internal Revenue devolves the task of collecting $6,000,000,000, the estimated yield of the new revenue bill. In the making of tax returns the bureau offers to taxpayers all of its resources, confidently expecting in return the co-operation of the public.

Assistance for All

Revenue officers will visit every county in the United States to assist taxpayers in making out their returns. The date of their arrival and the location of their headquarters may be ascertained by inquiring at the offices of collectors of Internal Revenue, and at postoffices and banks. Their duty is to furnish taxpayers with blanks, answer questions as to how to fill them out, swear taxpayers to their returns and accept payment of the tax.

When Tax Is Due

This service is all without cost to the public. Failure to see the revenue officer, however, does not relieve the taxpayer of his obligation to file his return within the time specified by law, namely, on or before March 15.

Returns are required of every single person whose net income for 1918 was $1000 or more, and from every married person or head of a family whose net income was $2000 or more. The exemptions under the new act are the same as under the 1917 act; i. e., $1000 for single persons and $2000 for married persons and heads of families. The rates, however, have been increased. Under the new act, the normal rate is 6 per cent on the first $4000 of net income above the exemptions and 12 per cent on net income above that amount.

The Proper Procedure

To farmers the Bureau of Internal Revenue offers this advice:

Get out your pencil and paper and begin figuring on your gross and net income for 1918 in order that if it is necessary to call upon a revenue officer for aid, you may be able, without difficulty, to supply him with the general information needed in making out your return.

Explanation of Terms

"Gross income" includes all the money you received during the year 1918 from the sale or exchange of stock, crops, wood, produce, or anything raised on the farm. If you bought farm products from another farmer and resold it, you must include the profits under gross income.

The value of farm products is not considered taxable income until reduced to cash or the equivalent of cash. If crops produced by you in 1917 were sold in 1918, the amount received therefor is to be returned under gross income in your 1918 return. The value of crops and stock produced in 1918 and on hand December 31 of that year need not be considered, but should be included in your return for the year in which they are sold.

If you exchanged farm products for groceries, merchandise, etc., you must include the value of such merchandise in your return of gross income.

What Is "Net Income"

"Net income," upon which the tax is assessed, is gross income less certain deductions provided for by the act. These include all business, but not personal or living expenses. In computing net income the farmer may deduct the amount paid for labor in preparing his land for the crop and for its cultivation, harvesting and marketing.

The cost of feed, seed and fertilizer used are also deductible items. The cost of stock purchased for resale may be deducted if the proceeds from such sales are returned as income.

The cost of minor repairs to the barn and other farm buildings, but not the dwelling, may be deducted, and

(Continued on Page 9)

Co-operation

There are 52 pages in this issue of Orchard and Farm. That is 12 more than we printed last month and 20 more than we had in January.

These extra pages were made necessary by the volume of advertising which we are carrying. The editorial columns are filled with helpful hints, interesting viewpoints, real information.

The more ads we have, the larger the paper. The larger the paper, the more information we are able to give our readers. Our advertising is increasing because the advertisers are getting results. Help to build up Orchard and Farm and increase its value to you by answering the ads which interest you.

The successful business farmer is usually the one who investigates new inventions or improvements, invests in money-saving equipment, and protects himself by purchasing reliable, advertised goods.

Elbert Hubbard once said, "The best way to stagnate is never to read an ad."

Using Idle Acres Between the Orchard Trees

AT LEAST one-half of the 80,000 acres of young citrus orchards growing in California in 1917 was planted to some inter-crop. The proportion in 1918 was even larger. Considering all varieties of fruit and nuts, it may reliably be estimated that more than 100,000 acres of young trees which had never before been intercropped, contributed during the past year to the nation's food supply.

Five years ago little was known about intercropping. The use of this method on a large scale is a relatively new practice in the west. The desire to respond to the call of the Government for increased food production, together with the comparatively high prices prevailing for food products, has been mainly responsible for the tremendous increase in intercropping.

Limits to Intercropping

It has always been regarded as unprofitable to intercrop orchards which have reached full bearing. Nothing has been learned in the past five years to warrant a revision of ideas in this respect. Indeed, war-time intercropping experience would indicate that such a practice is not only unprofitable but often actually disastrous. It therefore seems clearly demonstrated that intercropping must be restricted to the younger orchards, or at least to those not in full bearing. This ordinarily means that orchards over six years of age should not be intercropped. However, with trees such as walnuts, which are planted relatively far apart, the practice may be carried on without injurious effects until the trees are several years older.

Another fact brought out more clearly than ever before during the last two seasons is that ordinarily it is dangerous to intercrop dry-farmed orchards.

Only irrigated orchards may be expected to produce crops sufficient to pay for the extra labor required for planting and caring for them. While it is true that in the case of certain crops like pumpkins, or the grain sorghums for instance, which require relatively little water, a fair yield may be obtained in certain localities on unirrigated orchards, the yield at best is relatively low and one always runs the hazard of the intercrop competing with the trees to the marked detriment of both. Even in irrigated orchards one must be certain that he can supply sufficient water to prevent the robbing of one by the other. In fact, in most cases where intercropping has not proved a success, it is the water supply which has been the limiting factor.

A certain amount of judgment must be used, of course, in selecting an intercrop suited both to the climatic conditions and to the soil. There are certain kinds of soils not at all adapted to intercropping because of the fact that if left uncultivated for any length of time they dry out and pack so that it becomes increasingly difficult to get them to take water. In fact, there are some soils of this character which will absolutely "refuse" to be wet down after once drying out. They simply silt over, with the result that the water runs off. Fortunately, however, such soils are comparatively rare.

Is my orchard suited for intercropping? Will the soil stand it? What crop shall I use? Will the trees be injured? Are the returns commensurate with the expense? Under what conditions is intercropping advisable? These and similar questions about YOUR orchard are anticipated in this article, which gives the "do's and don'ts" of intercropping. Specific problems dealing with this interesting subject will be answered by Mr. Hodgson if sent, with self-addressed, stamped envelope, to Orchard and Farm office.

By Robert W. Hodgson

Written Especially for Orchard and Farm

Unless a grower intends to care for both trees and intercrop just as carefully as if they were planted on separate fields he had better not undertake the practice for he will fall far short of the attainable results. Again, it is unsafe for an orchardist, unless he is especially fortunate, to undertake the production of a crop with which he is not familiar and expect to make much out of it.

If an intercrop is a heavy feeder, such as cabbage, for instance, you will be doing your orchard a permanent injury in growing such a crop between the trees unless you provide some means of replenishing the soil with the amount of plant food taken out by the crop. In other words, it is penny wise and pound foolish to raise intercrops which will seriously reduce the productivity of your soil. For this reason alone many orchardists are prone to give preference to a leguminous crop, such as beans. It is, of course, necessary that the intercrop pay a profit on the time and effort expended in growing it and it is also important that the distribution of the work between the care of the orchard and intercrop be well adjusted.

If you are so situated that all of the limiting factors can be overcome, by all means consider the possibility of intercropping. If not so favorably situated, consider the matter carefully, for disaster has overtaken many a man who has tried to make the supply of water and labor required for one crop suffice for two.

While intercropping has its limitations, it also has its advantages. In the first place, an orchard intercrop does not have to carry the land rental charges, since these are properly chargeable to the orchard. Again, since spring plowing and clean cultivation is the rule, the intercrop often does not even have to pay the cost of preparing the land for planting. Irrigated orchards, of course, are provided with facilities for the delivery of enough water to maintain the mature trees and frequently the cost is a flat rate per acre so that oftentimes the intercrop does not necessarily have to carry the costs of water used in its irrigation. And, too, orchardists often have extra time and idle power which may well be spent in raising an intercrop. In other words, it frequently happens that about the only expenses the intercrop must pay are the cost of seed and planting, and the cost of harvesting, with perhaps a small amount for extra water and cultivation. Under such conditions, it is of course obvious that money can be made on intercrops where it might even be lost in field culture of the same crops.

ROBERT W. HODGSON

Is a close student, an accurate writer and a "regular fellow." In his capacity as Assistant Farm Adviser for the largest Farm Bureau in the United States (that of Los Angeles County) he spends most of his time among the practical orchardists.

But his observation, study and experience have not been confined to the South. On the contrary, the greater part of his work, prior to his connection with the Los Angeles Farm Bureau, was done north of Tehachapi. He knows the very latest in orchard practice and you can "bank on" what he tells you.

What Crop and Why

For a number of reasons the culture of beans has proved by far the most important intercropping practice. They are not hard on the soil; in fact being legumes, they may be expected to build it up when grown for a period of years. The water requirements are relatively low and easily met without inconvenience. The product is dry, non-perishable, high in food value, and suitable for shipment anywhere. Known varieties are adapted to a wide diversity of climatic conditions. Furthermore, until the present season, prices have been extraordinarily high. In 1917 it was not at all uncommon for orchardists to make considerably more from a crop of beans in the orchard than had been realized from a field crop a year or two previously. This last season beans received a severe setback in that conditions were very favorable for rust and heavy losses were incurred. This fact, together with present conditions in the bean market, makes the future for beans as an intercrop much less promising. All kinds of beans, from pinks and blackeyes in the north, to Henderson bush limas and Lady Washingtons in the south, have been successfully raised in orchards. Were it not for its susceptibility to rust the latter variety because of its early maturity would be a most desirable one for intercropping.

Sorghums in Orchards

Grain sorghums have been grown extensively as intercrops and this last season considerable use was also made of the sweet sorghums, which did remarkably well. The sorghums in general, however, are rather hard on the soil and the returns not so high as with beans. Potatoes have been used with considerable success. Where the soil is rich and mellow and not too heavy, few crops will do better than potatoes for returns per acre even though the work entailed in growing the crop is somewhat more than with beans.

Crops which have been successfully used include the winter crops of cabbage, cauliflower, winter peas, rhubarb, and other truck. With the exception of peas, all of these crops draw heavily on the soil and should therefore be used in a rotation with a leguminous summer cover crop.

Sweet potatoes have proved profitable where the soil is light and open, as have also peanuts. Corn, tomatoes and pumpkins have made good money in many sections, pumpkins having done especially well this last season. Intercropping is a possible source of additional profit, but by no means a "get-rich-quick" scheme.

A Plentiful Supply of Irrigating Water

Is essential to success with intercrops, and absolutely necessary if injury to the trees is to be avoided. This walnut grove furnished a nice income from the intercrop of potatoes, as well as a heavy yield of nuts.

The Secrets of Successful Apple Breeding

Written Especially for Luther Burbank *Orchard and Farm*

THE apple is, without doubt, the most widely grown, the most cosmopolitan and the most important of all fruits. Although followed quite closely by the orange, lemon, grape, banana, peach, pear, plum and cherry, it leads them all in value.

In the November number of Orchard and Farm I mentioned some of the older and better standard apples, most of which have been grown for a century or more. As with the cherry, peach, plum and grape, modern long distance shipping and drying methods and keener competition required new qualities and new standards, and while some of the older lines are still grown extensively, the superior values of some of the new and better varieties are generally acknowledged.

The White Astrachan, a Russian apple, is one of the most productive of all early summer varieties. This and the **Red Astrachan** were imported from Sweden into England in 1816 and later into the United States. The fruit is unusually large for a summer apple, and, as grown in this locality, is of a rich glossy light yellow; flesh is white, juicy, and tart. All of these qualities, together with the fact that it ripens in July and early August when other good apples are not to be had, make it very profitable as a cooking apple. It has proved to be quite profitable when grown for the early market.

The Black Ben or Gano is becoming popular as a market and shipping variety. The trees commence to bear when young and are regular producers. The fruit is quite uniform in shape, medium to large, with a tough, smooth, yellow skin mostly covered with an attractive rich crimson color. It is crisp, with a mild subacid flavor, and being a good shipper is a paying apple in most sections.

The Delicious is another variety which, although not as large and as highly colored, is crisp, juicy, sweet, subacid and melting, with a superior fragrance and aroma which make it one of the best of the newer apples. The trees are good, regular bearers.

The Rome Beauty is particularly valuable, as the trees are unusually early, regular and heavy bearers. The fruit is very uniform in size and shape, being large even while the trees are bearing continuously heavy crops. It is one of the most valued shipping varieties. Its skin is smooth, thick and tough, greenish yellow, mottled and crimson striped, and it possesses a fine-grained, juicy, aromatic flesh of superior flavor. Taking it altogether it is one of the very best of all apples for market, shipping and home use—a favorite wherever grown.

Stayman's Winesap is a favorite apple for mountain and coast climates, especially noted for its unusual keeping qualities; like the "Rome Beauty" it is a young, heavy and a constant bearer. The fruit is of medium size, the skin thick, greenish-yellow, slightly striped with red. The flesh is rich, juicy, subacid.

The **Winter Banana** is one of the newer apples which deserves the attention of all planters for home use, and may prove profitable as a market fruit. The flesh, while not as crisp and melting as most of the newer apples, is tender, mild and subacid, and is prized for its banana flavor.

The Old Stand-bys

It is well to look up the advantages in planting some of these valuable newer varieties, not forgetting, of course, the older standards, which have so long held their place by selection from among thousands of half forgotten types. They have attained and retained their position through a combination of good qualities in tree and fruit. Of the old standards, among the best for general planting are the **Gravenstein, Baldwin, Spitzenburgh, Wagener, Northern Spy, Yellow Bellflower, Newtown Pippin, Rhode Island Greening and Jonathan.**

The **Ortley** is one of the old standards which should be more generally grown. It is a large, bright yellow winter apple of extra fine quality. It is probably the best of the old standards not generally grown in California yet; it is well known in sections of the Northwest. No mistake can be made in planting the Ortley.

Some New Varieties

Among the newer successful apples offered to growers are the **Goldridge** and the **Golden Delicious**, both winter varieties. Another new apple, worthy of note, is the **Crimson**, a small but very fine fall apple of the "Garden Royal" type. Of these the **Goldridge** has been pronounced the best apple so far produced in California. It was developed as a seedling from the Newtown. It is of extra large size and as perfect in form as if turned on a lathe. It is clear yellow, and has a faint blush on the sunny side. It is a variety of the very highest quality and ripens soon after the Gravenstein. It keeps for several months in the best condition. The tree is a far better grower and bearer than the Newtown.

Results of Breeding

I have grown, selected, and fruited seedlings of all the apples mentioned below and many others, besides innumerable crossbreeds, from the best of these: **Early Williams, Rhode Island Greening, Delicious, Goldridge, Baldwin, Swaar, Spitzenburgh, Ben Davis, Porter, Yellow Bellflower, Fameuse, White Astrachan, Jonathan, King of Tompkin's County, Maiden's Blush, Northern Spy, Rome Beauty, Rambo, Tallman's Sweet, Wagener, Wealthy, Winesap** and **York-Imperial.**

We need no longer wait for chance, fence-row seedlings, not one in twenty-five thousand of which is really worth attention. Improved apples are to be secured now by the short and sure method of selective breeding.

In the next article will be described my improved methods of raising and rapidly testing seedling apples.

Apple Seedlings

In raising apple seedlings, when the object is to get improved varieties, it is generally best to select the seed from some one standard apple that already possesses most of the good qualities sought in the improvement. However, we must remember that all the more modern apples, having become more or less thoroughly crossed in the orchard by being planted side by side, rarely manifest the tendency to produce anything like the original. Winter apples are slightly more apt to produce winter apples from seed than are summer apples, and summer apples are about as likely to produce winter apples as they are to produce their own kind.

So thoroughly have apples been crossed by bees and by the wind that to intercross them is almost labor thrown away. For instance, one might cross two varieties which possessed certain desirable qualities, hoping to secure an apple possessing the good attributes of both. The probability is that the desired result would be accomplished almost as quickly from a planting of the seeds of any other apple. In fact, the crossing might have exactly the opposite effect from that desired, tending to neutralize the good qualities; in some cases the cross might even produce seedlings inferior to those raised directly from one individual variety.

Care of Seeds

Apple seeds, like all other seeds, germinate more readily if not dried too thoroughly; however, unlike pear and plum seeds, they will germinate if quite thoroughly dried, even though kept for a year or two. But the best method is to take them out of the apples, placing them when fresh, after

ABOVE: A new and extremely sweet apple developed in recent experiments. Not yet named.

Below: Luther Burbank's pride, the "Goldridge" apple, which has been pronounced again and again the finest variety in point of flavor, beauty and keeping qualities ever produced. It was developed from a seedling of the yellow Newtown Pippin, but is much larger than its parent stock. The large photograph shows the limb of a young tree, and the insert a ripe apple from the same tree.

THE world's greatest plant breeder is now nearly three score and ten, but is as supple as a young athlete and still works harder than many men half his age.

His message to young men is this: "Age reaps what youth sows. I have never possessed powerful muscles, nor been able to do the heavy physical labor that some men perform easily. But for forty years I have labored unceasingly—frequently far into the night. Hard work, if combined with right living, has never harmed anyone."

—*Photo by Hartsook.*

How I Develop New and Improved Varieties

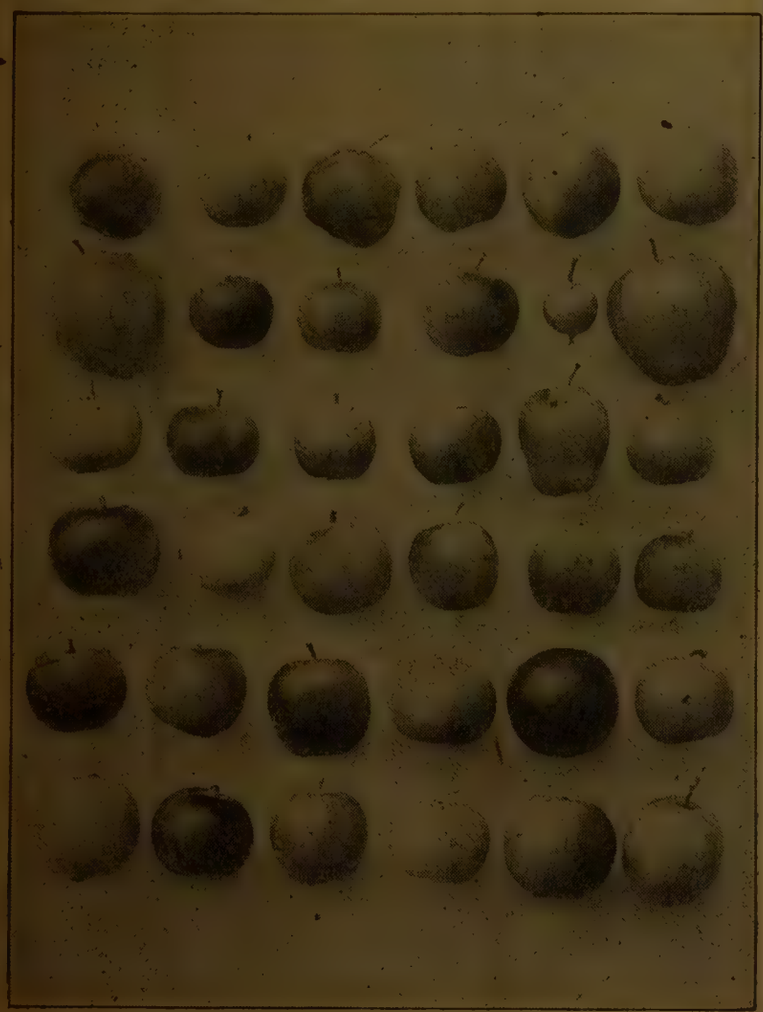
thorough cleansing, in a box of sawdust or sand with just moisture enough to keep the seeds from becoming too dry, but not moist enough to cause germination. In this way they can be kept until desired for planting, and when planted will germinate readily and with special vigor.

Apple seeds may be planted in a prepared bed in the open field in rows three or four feet apart—wide enough to permit the cultivation to be done by horses; or ten to fourteen inches apart—allowing sufficient space for cultivation by hand. The seeds should be sown rather thickly, about half an inch to an inch apart. In my own experiments, after opening the drills I always sprinkle in a little clean, sharp sand, and drop the seeds on this, usually covering them about one inch or even one and one-fourth inches in depth. Sand may be used for covering, but the young plants break through sawdust much more readily than through sand.

Careful Selection

In testing to obtain improved varieties the young seedlings must be carefuly watched and all weak or slow-growing ones should be destroyed as soon as recognized. Any found to be infected by mildew, a common disease among apple seedlings, should also promptly be destroyed. Inasmuch as the persistent aim should be to produce a plant that will resist diseases it is never wise to treat seedlings with fungicides. Only such plants should be preserved as are manifestly vigorous growers and thoroughly healthy.

In testing the seedlings that have been selected, much valuable time can be saved and less space occupied if they are grafted upon large bearing trees. In my own experiments I select one or two good grafts from each of the selected seedlings (usually at the end of the first year), and place them well out on the smaller branches of a bearing tree, utilizing such branches as are about half an inch or less in diameter. Thus they will begin bearing in two or three years, or at the latest, in four years, while if they are placed upon the large branches it will require fully twice as long to fruit them. By this method I have tested as many as 526 varieties at once upon a single tree, most of them being in fruit at the same time. The economy of space can be appreciated when we stop to consider that if these 526 varieties had been planted out as apple trees are ordinarily planted in orchards, they would have occupied almost five acres. Considerable time is also saved, for fully twice the time would be required for the young trees to produce fruit as for the grafts. By this method it is possible to test one hundred thousand varieties on a single acre.



If You Planted an Apple Seed

Would you expect to grow a tree producing the same variety of fruit as that from which the original seed was taken? If so, you might receive a surprise. The thirty-six apples illustrated above were all grown from seeds of the "Early Williams." They represent almost every type of fruit: Early, late, red, white, yellow, striped, sweet, sour, large and small.

Here Is the World's Most Remarkable Apple Tree

Upon this one tree were growing, at the time the photograph was taken, 526 distinct varieties of apples. To have produced this many varieties for experimental purposes upon separate trees would have required no less than five acres of ground. From the apples seen on the ground under the tree one could select fruit of almost any size, color, shape or flavor. Probably no more wonderful example of grafting has ever been known.

Outwitting the Codling Moth

Most orchard investigations now being carried on are for the purpose of eliminating guess-work. In this article an Oregon apple-grower tells how spraying for codling moths in his section was placed on a known basis.

ROGUE RIVER apples were unusually wormy the past season, some growers having lost from one-fourth to one-half of their crop. One orchardist tried dust spraying and the worms ruined practically all of his pears and apples. This, however, need not be taken as a reflection on the dusting method. There was the usual complaint about poor chemicals, which is the favorite method of accounting for spraying failures, but at the beginning of the season samples were tested and found to be of normal strength. Those growers who followed the advice of the county pathologist, C. C. Cate, as to when to spray, had better success but on account of the wide variation and contour of Rogue River orchard lands the proper time for spraying may vary as much as two weeks in different localities and Professor Cate's problems were therefore intensified.

Caging the Bugs

In order accurately to ascertain the exact time for applying the various codling moth sprays in each orchard district he proposes that in each locality which differs from others in seasonal variations one tree be screened. It is suggested that the grower pay the cost of covering the tree. The pathologist will then study the moths within the inclosure and thus be able to tell exactly when to spray in that locality.

A Successful Plan

The plan which has been followed is to observe when the first moths of each brood emerge from the pupa stage and then to calculate the number of days it will take for the eggs which they lay to hatch. It is possible by means of this knowledge to apply the spray just before the worms begin to work on the fruit. It is recommended that additional sprays be given three weeks later, making two for each brood, besides the calyx spray, or five altogether. This treatment, it is calculated, will keep the codlings well covered with poison.

Arsenate of lead, either in paste or powdered form, is generally used, the latter being the most convenient on account of its almost instant solubility.

"Spotting" the Spots

The writer and some other orchardists follow with perhaps equal success a somewhat different plan. After the calyx spray, which is the all-important one for codling moth, the apples are closely watched until tiny dust spots appear, indicating that the worms have begun to work. This is generally about the first of June, or one month after the calyx spray, and no time is lost after the spots are "spotted" in covering the codlings with poison. Of course the worms beat us to a few apples, but only a few, as an occasional worm always hatches ahead of the main brood and the spray may be said to be successful if applied in time to catch most of them.

The time for applying the third and last spray is determined in the same manner and comes anywhere from the first to the twentieth of August, when the second brood begins to hatch. In order to make assurance doubly sure, we use for the last two sprays a solution 50 to 100 per cent stronger than is recommended. By following this plan we have found it unnecessary to use a fourth or a fifth spray.—O. H. Barnhill, Oregon.

Profitable Poultry Practices

THE average annual profit per hen in California is less than 90 cents. It is possible, through observation of certain well-defined principles, to make a profit of $6 per hen. An average of from $3 to $5 is not unreasonable.

This is the assertion of C. J. Evans, poultry specialist of the United States Department of Agriculture, who has recently arrived to take charge of district extension work in the northern part of the State. The appointment of Mr. Evans to this position, and of Mr. Nat E. Luce of Los Angeles to a corresponding post in the Southern half of the State, followed the promotion of Mr. Arthur A. Peters to the office of District Agent, covering a territory including the Pacific Coast and Northwestern States.

The more thorough organization of this service in California, in co-operation with the State University and the county agents, marks an important epoch in poultry development, and it is to be hoped that all poultrymen will take full advantage of the presence of these men to learn about the latest discoveries and methods, which had already raised the profits of egg producers in other States.

Interesting and helpful articles by these well-posted specialists will appear from time to time in the columns of Orchard and Farm. It will pay every reader who keeps poultry to follow them closely.

Plan of Campaign

The campaign that has been inaugurated by the United States Department of Agriculture in co-operation with the State Colleges of Agriculture to stimulate and increase poultry production along more efficient lines is divided into the following phases:

Careful selection of breeding stock to reproduce a larger percentage of good types of profitable producers.

Early hatching so as to produce fall and winter layers.

Confining of mother hens to brood coops for at least two weeks after the chicks are hatched.

Provision of free range for both growing stock and layers, to stimulate growth and production and conserve food consumption.

Preservation of eggs for winter use.

The production of infertile eggs as soon as the breeding season is over.

Discouragement of the practice of marketing profitable hens of the general purpose class before the end of their second year, and of the Mediterranean or egg class, before the end of their third laying year.

Careful selection of all hens in order to eliminate the unprofitable producers.

The specialists also plan:

To discourage the marketing of all profitable pullets as broilers and of all well matured pullets for meat.

To encourage the caponizing of cockerels only when free range can be provided, and a special near-by market afforded.

To encourage back yard poultry keeping, especially among city and suburban dwellers, thereby utilizing table scraps for the production of fowls and eggs for home consumption.

To encourage turkey, duck, and geese raising when circumstances are favorable.

On a Well-Managed General Farm

Was photographed this poultry yard, which, with its pure-bred, high-laying fowls and adequate yet inexpensive equipment, is a very profitable side line for the farmer-orchardist. Instead of regarding his poultry as a nuisance, or at best, a small issue suitable for the women folk to handle, the wise rancher recognizes the possibilities for profit and gives his hens the same thought and care that he bestows upon his livestock, trees, or fields.

Utility and Beauty Must Both Be Considered

WHEN, in order to be classed as a genuinely good one, should be equally capable of going in the show ring and taking a ribbon or of going into the yard and making a record as a layer. And the breeder, in order to get the advantage of the best and broadest markets, must breed for a combination of utility and standard quality instead of following the tendency to become either a fancier or a utility breeder. This advice is based largely on results obtained at a poultry farm where many of the exhibition males used have 200-egg production in their pedigrees.

Except in a few more or less isolated cases, there is nothing in the standard requirements directly opposed to utility, and the buyers during the past few years have shown an increasingly insistent demand for fowls that have egg-producing ability back of them. Fanciers are too prone to put the appearance of the fowl above everything else and thus to neglect the egg-laying quality, while on the other hand unsuccessful fanciers are likely to turn completely to the egg-producing side of breeding without any attention to "points." Either of these attitudes, it must be agreed, is an obstruction to the best development of poultry raising in the United States.

Far-sighted breeders are developing flocks along breeding lines to secure a combination of good production, vigor and uniform standard type. That goal is readily attainable through careful selection of breeding stock, and those who follow the policy suggested may confidently expect ultimately to supply the most attractive markets.

Does It Pay to Caponize?

CAPONIZING is no longer a fad; its sound commercial possibilities are almost universally recognized. The use of the capons for raising chicks is likewise becoming more and more general. It is the practice on many successful poultry farms to use the capons while they are being fattened for rearing baby chicks, thus doing away with the necessity of having artificial brooders, as well as giving the chicks more natural care.

While anyone, even a boy or girl, can with a little practice, perform the caponizing operation, many poultry raisers prefer to enlist the services of an expert, who is less likely to cause loss among the birds because of possessing the skill born of long practice. The charge is small compared with the increased profits to be anticipated. Those desiring to caponize their own birds may, however, purchase sets of instruments at a very reasonable figure.

Breeds for Capons

All breeds are good, but some are to be preferred. Experience has shown the superiority of the Barred Rocks, Brahmas and Indian Games, as well as the crosses of these breeds. For a small capon to be used as a broiler, the Brown Leghorn is good. These breeds are easy to operate on, and make rapid growth. All poultrymen, however, no matter what breeds they possess, should understand the possibilities of caponizing.

Advantages of Caponizing

The capon attains, as a rule, one-third to one-half more weight than the cockerel, in addition to putting on fat much more rapidly. The capon seems to have more intelligence than either the hen or cockerel, is noiseless, and "warranted not to scratch" unless given the task of raising chicks.

The delicacy of the meat gives it a premium value on the market, while the rapid development of the birds makes them the most profitable market fowl known. Capons usually command a price from 10 to 15 cents a pound higher than cockerels.

Capon experts suggest giving the birds plenty of room and a good supply of greed feed. Strangely, they appear to fatten more rapidly when given a little range than when closely confined. They will not, however, "run off their flesh"; for, being of very quiet and docile disposition, they devote most of the food consumed to the storing up of flesh.

Compared to Cockerels

Capons may be kept longer than cockerels and instead of becoming coarse and staggy, will continue almost indefinitely to put on desirable flesh. Closer confinement is advisable during the last ten days or two weeks before marketing.

At six months of age the Cockerel will have made its most rapid growth. The same bird, if caponized when from 10 to 12 weeks old, can be made to continue its growth until 8 or 10 months old. It is not uncommon for light Brahma capons to attain a weight of from 12 to 15 pounds each at 10 months of age. Smaller capons, however, will more nearly supply the needs of the average family. Consequently the Plymouth Rocks and Wyandottes are much used.

A fattening ration successfully used by commercial poultrymen consists of corn meal and ground oats (equal parts by weight) or corn meal and middlings, moistened with water or milk.

Costs and Returns

H. Armstrong Roberts, the poultry authority, estimates the cost and returns of capon raising, during periods of normal feed prices, to be about as follows:

The cost of feeding for 12 months is from 80 cents to $1.25, depending upon cost of feed. Add to this the price of the operation and the value of the chick at hatching time. As an average figure one might select $1.25 as the total cost of production. Assuming an average weight of 8½ pounds for a 12 months' old bird, with a selling price of only 30 cents a pound, the market value at killing time would be $2.55. This leaves a net profit of more than $1.25.

While there are still poultrymen who will insist that there is no money in caponizing, the practice is spreading and has proved profitable in almost every case where it has been given a fair trial. The raising of 1000 or 1500 pullets naturally involves the feeding of an almost equal number of young cockerels. To dispose of these in the usual manner entails, under ordinary conditions, a real loss.

Complete directions for caponizing may be obtained with sets of instruments. For those who do not care to undertake the work themselves the services of professional operators are available.

Typical Barred Rock Capons

Exhibited at a recent poultry show. Note the heavy bodies and fine feminine heads. These birds attained almost twice the weight of cockerels from the same brood.

An egg in the box is worth two in the brush. Are your hens properly housed and fenced?

Be sure that the male at the head of the flock is purebred.

Barley contains more bone and muscle food than does wheat.

Early to hatch; early to lay.

These Stumps
Lay unused until the owner conceived the idea of breaking them up with blasting powder.

Blasting Stumps for Stovewood

WHAT some persons might term laziness, but what appears to be nothing more nor less than good judgment was displayed by the farmer who, after a back-breaking tussle with a big, knotty stump which he was attempting to split into stove wood, decided in desperation to shatter it with blasting powder. Applying the same methods that he used in uprooting stumps in his fields, he soon split the offending chunk into a hundred pieces, and was so well pleased with the results that he used the method thereafter on all obdurate pieces of wood. Describing the methods he employed, he said:

How It Is Done

"If the chunks are not near any buildings, it is just as well to mudcap the charge; that is, use half a stick of dynamite, remove the cartridge paper, and pack it closely into the most vulnerable crotches of the chunk, insert the cap with fuse attached, and pack clay or moist earth over it.

"If the work is done near buildings, however, this method cannot be used. I, therefore, bore into the chunks with a one and one-half inch auger, running the holes in a little beyond the heart. Into the hole I pour a little loose dynamite—about an inch cut from a cartridge and weighing not over an ounce. This is packed closely into the bottom of the hole with a wooden stick. Then with another slender stick, a hole is poked into the dynamite and the blasting cap inserted. Some loose dirt free from gravel and grit is poured over charge and cap and after the cap is covered with about an inch of dirt, the hole is filled with moist clay tightly tamped in.

"This little charge of dynamite can be depended upon to break up into pieces all stump or crotched wood to a size suitable for use in open grates."

What Happened
When the charge was exploded is graphically shown in this illustration. The peaceful uses for explosives are many and varied.

Tax Pointers

(Continued from Page 4)

also the cost of repairs to farm machinery and fences. The cost of materials for immediate use and farm tools which are used up in the course of a year or two, such as binding twine, stock powders, spades, etc., also may be claimed.

Farm Machinery

The cost of farm machinery such as a tractor or threshing machine represents "capital investment," and as such is not an allowable deduction. There may be claimed a reasonable allowance for depreciation of farm buildings other than the dwelling, farm machinery, work horses and work wagons, and stock purchased for breeding purposes. No depreciation on stock raised or purchased for resale is allowed.

The farmer may deduct taxes paid or accrued during the year 1918 except income taxes and taxes assessed against local benefits of a kind tending to improve the value of the property. Losses sustained from fire or other casualty, or from theft may be claimed if not compensated for by insurance. If a farmer in 1918 sustained a loss in any transaction entered into for profit, outside of his farming interests, he may claim the amount as a deduction. Such deduction was not allowed under the preceding act.

Bad Debts Allowed

Debts ascertained to be worthless and charged off within the year may be deducted.

These and other deductions allowed taxpayers will be explained by the revenue officers who will visit your county. To the taxpayer who has kept books the making out of an income tax return will not be difficult. Those who have not are urged by the Bureau of Internal Revenue to accept the offer of assistance from one of these Government experts.

Heavy Penalties

If the taxpayer desires he may pay the tax in full at the time of filing the return, or in four installments, the first of which is due on or before March 15, the second on or before June 15, the third on or before September 15 and the forth on or before December 15. For failure to file an income tax return on time, the penalty is a fine of $1000 and an additional assessment of 25 per cent of the amount due.

For "wilfully refusing" to make a return and pay the tax within the time prescribed, the penalty is a fine of not more than $10,000 or one year's imprisonment or both. A similar penalty is provided for making a false or fraudulent return together with an added assessment of 50 per cent of the amount due. The penalty for failing to pay the tax when due is a fine of not more than $1000 and an added assessment of 5 per cent of the amount unpaid, plus 1 per cent interest for each full month during which it remains unpaid.

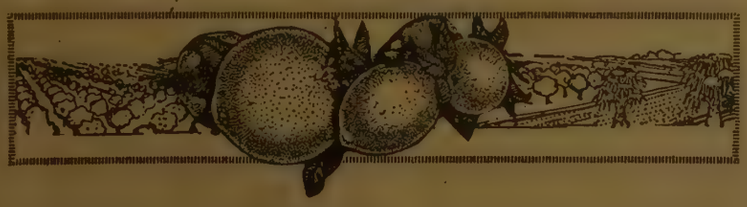
Manana (Tomorrow) Never Comes

"SEEMS like I never will get that orchard pruned," remarked Ben Gonnadooit. "T'morrow sure, I must fix th' wagon so's we kin drive over an' get th' shears an' compound thet I left over t' Fred Smith's place when I fixed his trees up last year. Seems like time flies so fast, a feller kaint keep up with it!

"We oughter fix up that culvert where the road washed out last week, because th' next big rain thet comes along will take it clean away; th' hole is small now an' we could fill it pretty easy ef th' Fresno scraper was fixed. Maw, you remind me t' take thet Fresno handle to th' blacksmith t'morrow sure. I plumb fergot it last trip.

"Next week I guess I'll have t' hire an extry man or two an' get after th' south field, or we'll be late planting agin' and get about half a crop like we did last year. Of course not havin' the water on it in time had somethin' to do with it. We might a' knowed thet bent shaft on the pumpin' outfit 'd have to buckle jest at thet time when we needed th' water so badly.

"They's so many things t' do a feller don't hardly know where to start. Hello, there's Jake comin' in from th' field with his team; must a' broke thet weak tug on ol' Nell's harness. What's that? No, it surely ain't noon already! Why, sure enough, he's jest comin' in t' dinner. Here's a mornin' gone and I been workin' hard but it don't seem like I've accomplished nothin'. Yes, sir, time sure does get away afore ye know it."



Using Cull Arizona Grapefruit

GRAPEFRUIT in the Yuma Valley was for a time sold for two dollars a box, a box containing seventy-five to one hundred grape fruit, making an average of two or three cents apiece. These were culls and would not keep for any length of time. Some tests were made in canning these fruits in order to see whether at the low price for which they were selling it would be more profitable to preserve the pulp and juice.

It was found that it required the strained pulp of three and a half grape fruit to make one pint of juice. This was processed in the pressure cooker 3 minutes at 3 pounds pressure. This juice was canned without the addition of water or sugar. Juice prepared in this way can be used for cool drinks and ices in the summer. As it jells very readily it can be added to other juices that are lacking in jelly making properties. For fruit salads or cocktails, fruit was prepared by removing all the white part and the fibrous partitions.

Three whole grapefruits and the juice of one were required to fill the pint jar. This was processed 8 minutes under 5 pounds pressure. This required extra time for preparation and it was found that the grapefruit could be peeled, halved and all white removed leaving the fibrous paritions, (which could be removed when the jar was opened) in much less time. All the outer white part should be carefully removed.

Upon tasting sample jars the contents were found to possess a decided grapefruit taste with a slight bitterness, which was not disagreeable to one fond of the grapefruit; in fact there seemed to be little difference in taste between the canned product and the fresh fruit which also has a slightly bitter taste.

The cost of a pint of juice prepared as above is about 10 cents. The cost of the canned pulp is about 12 cents per pint on a basis of 3 cents each for the grapefruit.—Grace I. Tufts, Yuma, Arizona.

Sick Machinery

(Continued from Page 4)

Put down the name of manufacturer, year bought, and the number of the machine and part if it is known. If orders are sent to the factory be sure to specify the catalogue, pattern or casting number of the part. Order repair parts early, as the dealer may not have them in stock. Overhaul your equipment and have it all in good shape before the season opens.

Now for New Buildings

This is also a good time to make plans and preparations for any building which is contemplated. This will assure the presence of the material when needed, and will often permit the making of favorable contracts which would be difficult to consummate later on, when the rush of spring work and early summer work is well under way.

As the coming season promises to be a busy one in the building line, every farmer who wishes to build is urged to get his plans under way.

Early spring also is a propitious time for the building of new and the repairing of old fences. Worn-out posts and wire should be replaced where necessary to make the fields stock-tight. If possible the supply of posts should be cut on the farm or purchased from a neighbor. It is a good practice to peel the posts and dip the butts in creosote for preservative purposes. Even charring of the butts is better than no provision for protection from rot.

The wise and frugal farmer plies the paint brush during the spare time of spring and fall, as he understands the dual value of paint in protecting against decay and weathering and in improving the sightliness of the farm buildings. If the farmer feels that he can not afford to use oil paint on his buildings, he at least can utilize cold water paint or whitewash. The disadvantage of these materials is that their use requires more labor, for they must be applied every year, and if the owner wishes to use oil paints later on he will have to scrape away all the whitewash first.

Correspondence Study

Are you aware of the opportunities presented by the free correspondence courses offered by the University of California? In addition to covering agricultural subjects these courses embrace practically all branches of the university curriculum. It is surprising how a little time each day devoted to systematic study will help to fill the "gap" left by neglected or unfinished education. If you are interested in improving yourself, by all means write to the Extension Division, University of California, Berkeley, for information.

Peculiar Problems of the Desert Orchardist

The weather prophets of the Mojave Desert may always make with absolute assurance one prediction—that the wind will blow. And this means, of course, that the sandy soil will be moved. Mr. Mason's interesting account of how enterprising pioneer fruit-growers overcome the effects of these conditions should furnish inspiration, as well as useful ideas, for hundreds of Orchard and Farm readers who encounter similar, if less serious, problems, even on high-priced, improved land.

By Albert J. Mason

ONE hears a great deal in praise of "the brave homesteader" who pioneers a trackless waste and endures the hardships which are generally conceded to go with the process of "taking up land." But too frequently the homesteader deserves less praise than he is accorded, especially if he is of the type who prefers to eke out a mere existence on the desert rather than work for wages in some settled community.

There is a broad distinction, however, between this type of settler, and the one who sees all about him hidden opportunities ready to respond to the application of unstinted labor and ready capital. Imagination, in its most virile form, is required in order to visualize smiling fields, bearing fruit trees and a comfortable home where nature has placed shifting sand, cactus, soap-weed and yucca.

Yet the pioneer has the satisfaction of knowing that instead of taking the easy route to success, through the outlay of the large sum of money required for investment in high-priced land, he is pitting his skill and labor against all problems as they arise and extending his monetary investment over the period of years covered by his improvement work. When considered in this light, demands seem less exacting and attainments more impressive in pioneering than in "ready-made" farming.

A Great Attainment

It was the writer's privelege recently to visit a California desert ranch which is like an oasis on a thristing plain. And yet it seems scarcely correct to designate it as "desert" land, because ample water for irrigation is reached at a depth of 165 feet. There is, moreover, a project on foot which will furnish gravity water for this ranch and thousands of acres of surrounding land. But that is getting ahead of the story. For with the water raised from the well, the owner of this 300 acres has already developed a promising 65-acre apple and pear orchard which would do credit to any region where less serious difficulties were to be overcome. Considering, in fact, the insignificant first cost of the land, it would seem that the money spent during the past six years in development is about to bring a rich reward, for the four and five-year old trees are just coming into bearing and shipments already made from similar and somewhat older ranches as well as the excellent condition of the young trees, indicate that heavy yields of the highest quality fruit are to be expected.

Water First Essential

The 65-acre orchard tract is watered by means of an underground cement pipe system, supplemented by a 1,000,000 gallon reservoir. The water is supplied by means of a 75-horsepower oil engine.

The soil is very sandy, but of marvelous productive powers when supplied with the all-important water. The greatest problems encountered by the desert ranchers, after the water supply has been assured, have to do with the control of blowing sand and strong prevailing winds. So many California ranchers have similar, if less serious problems, that the methods used on the desert should be of interest and assistance to many Orchard and Farm readers.

Analyses of the soil show it to be very rich in all mineral constituents and lacking in nitrogen and humus. In working to "anchor" the soil, then, the rancher must also keep in mind the necessity of supplying organic matter as rapidly as is consistent with good orchard culture. He must tackle the blowing problem from two angles; one way is to cut off the wind and at the same time catch the drifting sand; the other method is to improve the physical quality of the soil so that it is no longer so susceptible to blowing.

AT THE left there is shown a section of a 4-year-old apple tree which has been consistently pruned with a view of developing a strong, low-down, wind-resisting foundation for the fruit wood. The hand indicates the point at which new growth on the windward side will be removed in June or July. This summer pruning is undertaken in addition to the regular winter work in order to correct the tendency toward bending inward before the force of prevailing winds. During the summer and early fall months, which are free from strong gales, considerable straight wood will be developed.

The center photograph illustrates a section of the wind-break. A row of black locust trees is set opposite the spaces between the taller poplars.

Below is a graphic illustration of the "propping" or bracing method used at El Rancho del Desierto to prevent bending of the limbs on the windward side of the trees. The props are usually made from sections of the canes removed at pruning time.

The first step is usually the planting of wind-breaks. Various kinds of trees and hedges are used, including rows of evergreens, which have the advantage of affording good protection in winter. An objection to their use, however, is the slowness of growth which characterizes most members of the "tribe." One of the best and most efficient combinations for balking the wind is that used on El Rancho del Desierto. It consists of a double row of trees, set quite close together and in "staggered" formation; that is, with the trees in the outside row set opposite the space between those of the inside row.

Trees as Allies

The inside trees are poplars, selected because of their rapid growth and adaptability to the desert climatic conditions. After four years they have in nearly every case attained a height of 12 or 14 feet, affording considerable protection to the young trees.

The outside row consists of black locust, smaller and more dense than the poplars and consequently capable of closing the spaces between them. The thorns of the locust trees give them added value, because when they shall have formed a dense hedge, they will afford better protection from live stock than a barb-wire fence. A further reason for their use is the fact that they will always be considerably behind the tall poplars in growth and will therefore have a tendency to force the wind up and away from the orchard. And last, but not least, when the time comes for thinning them, they should become a valuable source of fence post material. The black locust is said to make one of the toughest and longest-lived posts known.

Utility vs. Beauty

The owner of Desierto Rancho finds that the construction of a ridge just outside these rows of trees along the irrigating furrows, assists materially in stopping the drifting sand, especially in the low spots. He also made another and more important discovery, born of bitter experience, and traceable to pride and sentiment, which, as we all know, are quite generally met with in the modern scheme of business, but not always practical. In this case he desired to improve the view of his place from the road and its first impression upon the visitor, by clearing off the native vegetation entirely to the fence line. Since his orchard was set in some distance from the line, however, he discovered that this merely made an open stretch of loose sand for the wind playfully to pick up and blow through his young trees. Had he been content to let the outside line look slightly "ragged" for a few years, he would have been saved a great deal of shovel and fresno work as well as considerable delay and expense.

Improving the Soil

Having done as much as possible to break the force of the wind from the outside, the desert orchardist has by no means solved his problems. He must as soon as possible establish a cover-crop which will tend to hold the soil. At the same time, of course, he will wish to grow something to supply feed. At El Desierto, barley, rye and speltz were largely used at the beginning, these crops supplying several cuttings of hay as well as some material to turn under in the fall. The usual practice is to plant a certain area in the fall and the following autumn, to plow under every other check, leaving the alternate patches to make volunteer growth and to hold the soil. The theory is that these intervening strips of vegetation will break the force of the moving sand while the plowed strips are being summer-cultivated. The next year the area which has been cultivated and reseeded is allowed to remain and the strips which were not touched during the previous summer are plowed up and cultivated. Thus alternate strips are tilled every other summer.

One part of the orchard was seeded to alfalfa, but the trees did not seem to do so well and the alfalfa was plowed under after the second year. It was believed that the lucerne drew too heavily upon the soil-moisture, but that it worked injury only because of the youthfulness of the trees. It is thought, moreover, that the resulting benefit to the soil from the growth of the alfalfa will more than offset its temporary detrimental effect upon the young trees. It is planned to grow some cultivated cash crop, such as potatoes, between the rows on this alfalfa area; the soil is undoubtedly much improved and with the use of plenty of water, a tremendous yield is anticipated. It is believed that one of the quickest means of bringing the sandy type of orchard soil into condition and at the same time put the ground in shape for growing a cash crop which will help to pay expenses, is by the use of alfalfa, melilotus or other legumes, following the first crops of grain hay. If the cash crop be a cultivated one, additional benefit will result to the soil and trees because of frequent irrigation and the stirring up of the soil, both certain to facilitate decomposition of organic matter.

Manuring Very Important

All available manure is, of course, applied near the individual trees and plowed under after the disc has been run over it. One far-sighted rancher in this section believes that the salvation of his orchard lies in the keeping of livestock, and he has devoted considerable attention to the growing of crops which will provide the necessary feed. A small patch of alfalfa, supplementing his heavy production of grain hay, solved the roughage problem. To grow sufficient grain and still maintain the necessary pro-

(Continued on Page 14)

10 Searching Questions About the Maxwell and 10 Frank Answers; Read Them, for They May Decide Your Choice of a Car

Q.—Reduced to one point what is the single greatest thing you can say about the Maxwell?

A.—It is reliable.

Q.—What makes it reliable?

A.—The chassis was designed five years ago to be extremely simple. Then we kept on making and making Maxwells all alike on this chassis year after year until now we have made 300,000 of them. Our policy is to do one thing well and thus obtain perfection.

Q.—Have you changed the original design any?

A.—Not in any single fundamental. We have added an improvement here and there from time to time—but no changes from our original program.

Q.—Have there been any great chassis improvements in the last 5 years?

A.—We believe not. There have been multi-cylinder cars and multi-valve cars; but in a car under $1000 we do not believe them to be practical.

Q.—How much of the Maxwell car do you build?

A.—We believe that we manufacture more of the parts that go into our car than any other manufacturer.

Q.—Why do you do this—can you not buy parts from others cheaper than you can build them?

A.—In some cases yes; but not so good as we can build them. In other cases no, for we operate 8 great plants, have an investment that runs into many millions of dollars, carry a tremendous inventory, have a rapid "turnover" and a large one. Besides, we make parts for cars other than our own including some that cost in excess of $4000.

Q.—Has the Maxwell every modern equipment?

A.—Yes, even including the carrying of the gas tank in the rear.

Q.—Have you improved the appearance of the Maxwell any?

A.—Yes. We have made a vast improvement in the last few months—so much so that many persons thought we produced a new model. Note the illustration. This is drawn from a photograph without the slightest exaggeration.

Q.—How about parts?

A.—There are $5,000,000 in parts carried by 2500 Maxwell dealers all over the United States.

Q.—Will you reduce the present price if I buy a Maxwell now?

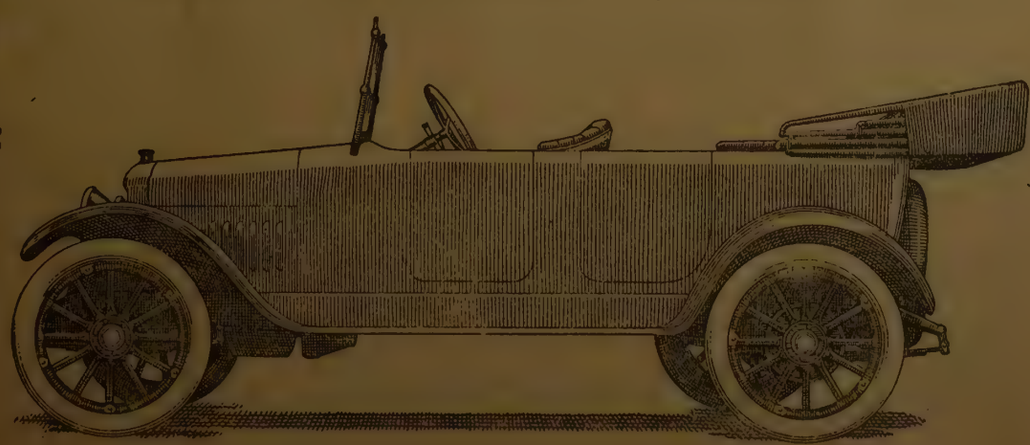
A.—No. The present price is guaranteed until July.

Price $895 f. o. b. Detroit.

MAXWELL MOTOR COMPANY, Inc., DETROIT

Maxwell

More miles per gallon
More miles on tires



The Older They Are— A "Too Real" Comedy Drama

By Albert Constant Jameson

Written Especially for Orchard and Farm.

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AT FIFTY John McGowan was thrifty. He had been thrifty at twenty and probably would have been at ninety if he had lived that long. Thrift was as much a part of John's make-up as his bandy legs, ruddy complexion and avowed distrust of women. Not that he really disliked them, although he was generally known as a "woman-hater." His attitude was, rather, one of lofty indifference based on his frequently-expressed belief that "they are all fools." In spite of infrequent association with members of the opposite sex, however, he secretly confessed to a very clear understanding of feminine nature, and on the occasions when he had business dealings with women, was wont to proceed with the assurance born of self-satisfaction. Feeling, as he did, that the workings of the feminine mind were as an open book to his analytic brain, he had so far, by means of his very assurance, escaped the inevitable disaster, and thus succeeded in strengthening his own beliefs. But that was before John met the Widow Martin.

Throughout the town and neighboring countryside McGowan was familiarly known as Mill John. Although this nickname had undoubtedly arisen from his long connection with the Peters flour mill, where he had been for many years a faithful employe, there were those who asserted that he had gained the appellation because he divided his pennies into mills just as other folks divided their dimes into pennies. Be that as it may, it must be admitted that a mild sensation had been created on the few occasions when John had openly and guilelessly spent a half-dollar on some small luxury for himself. The effect was no less than electrical, therefore, when one Saturday evening in May he strode through the swinging doors of the corner saloon, and throwing a ten-dollar bill on the counter, waved the entire clientele of the place to the bar. "Drrinks fer th' crrowd," he rumbled, and going to the door beckoned also to some friends who were passing by outside. "Come on, lads, an' wet yer whistles. Mill John is treating!" he called.

Even while hastening to accept the summons, the astounded beneficiaries of this unexpected invitation began wildly to conjecture as to what strange transformation was taking place. And John did not keep them long in suspense. For he broke into their whispered exclamations with his gutteral growl. And the announcement that he made was like a high-explosive bomb dropped into the midst of a Quaker meeting.

"Lads," he shouted, "ye are celebratin' th' engagement of Mill John! I am goin' t' be married verra soon to th' bonniest——"

But he went no further, for the bedlam which followed this announcement completely drowned even his booming bass voice, and while some of the celebrants, still cheering, pounded him enthusiastically on the back, no less than five scurried through the door to spread the startling story. But all this was AFTER he had met the Widow Martin.

During the comparatively short interval that Mill John had known her, most of the accumulated beliefs of his fifty years had been either shaken, disarranged or entirely upset. When he paused to consider what had happened to him, John found himself hastening for a "bracer" to strengthen his tottering nerves until such time as he could again get his bearings. But during most of the tempestuous period through which he had recently passed, he had found little time to pause and consider the various steps in his metamorphosis.

The term "bonny" would scarcely have been applied to the Widow Martin by any person but John. Anyone with clearer vision would probably have selected, rather, the expression "buxom." She was, however, in spite of an undeniable tendency towards stoutness, attractively wholesome and of the cordial disposition that instantly wins friendship and respect. When the townspeople had had time to recover slightly from their first shock and to consider the situation in its broad light, they had to confess that since John had chosen the fiftieth year of his life to fall, he might have done worse—much worse. And considering, also, the fact that John's unconcealed solicitude for pennies—yes, even mills—had resulted in the accumulation of a very comfortable surplus and the fact, furthermore, that the widow had been having rather a hard struggle for the past few years—considering all these things, even those who had been at first inclined to criticise, admitted that, perhaps, after all it was a good thing that these two had met—a very good thing. And, strangely enough, it was this very difference in their circumstances which created the situation that threw them together.

It all came about through an advertisement in the Ardendale Mercury. Pressed by her debts and unable to keep up the interest on her little home, the widow finally determined upon selling her equity and announced in the columns of the local paper, a "bargain for cash." Now, John's canny nature was not of the miserly sort. He did not keep his gold in an old sock and count it over every evening by the light of the smoky lamp in his bachelor quarters. On the contrary, he continually sought opportunities for safe—absolutely safe—investment. And cautious investigation having revealed the real attractiveness of Widow Martin's "bargain," he hied himself on the day following the insertion of her advertisement to the pretty little bungalow, which stood on a hill overlooking the southern portion of the town and was surrounded by five acres of land. Flanking the house on either side were a number of equally attractive suburban homes; the entire neighborhood, in fact, betokened pride and respectability, and closer inspection strengthened John's interest in his prospective purchase.

Nor was this interest lessened when the widow opened the door in response to his knock; he had never liked to deal with what he described as "sharp-featured, hatchet-faced women, who regarded him and all else with suspicion and flew off the handle at the least provocation." If he had been a reader of Shakespeare (which he was not) he would undoubtedly have sympathized with Caesar's antipathy for "lean and hungry" men and extended the feeling to certain members of the weaker if not gentler sex. He, therefore, found the frank, friendly attitude and ample figure of the Widow Martin very reassuring, and lost no time in making various inquiries about her property.

To all of his questions she responded promptly and pleasantly, and when at length she served some hot tea and excellent doughnuts, he found himself very much at ease with her and in no haste to conclude the deal. Glad of the opportunity to study her, as he always studied those with whom he had business to transact, he rather quickly drew his own conclusions, and with his usual assurance proceeded along the lines that they suggested. A plan was developing in his mind. His investigation so far had failed to reveal any unsatisfactory or undesirable features about the property, and a walk over the land, which was set out to fruit and which, as the owner explained, had begun to pay a nice income, but not sufficiently large to meet her accumulated obligations, brought to light no serious defects. While the first mention of price had revealed a slight difference of opinion, Mill John, who held himself nothing if not a good judge of situations, did not allow himself to worry over this fact, anticipating little difficulty in closing the bargain, once he had satisfied himself that he really wanted the place.

So desirable did the whole proposition appear to be, in fact, that his failure to discover any defects only strengthened his determination to carry on further investigation before making a definite offer. He decided to employ his knowledge of feminine nature.

"And your neighbors, Mrs. Martin," he finally suggested—"are they all pleasant and congenial-like, makin' this a desirable location for a home, so to speak?"

"Yes, indeed, Mr. McGowan," she replied. "They are all very nice people, and I have found them very friendly always; that is—" and John's eyes narrowed while he listened a bit more attentively—"that is, all except one woman who lives across the boulevard and about a mile up the road. Hilden is her name—Matilda Hilden, and she has made a great deal of trouble for me. She's an awful old gossip and seems to spend her time thinking up harmful stories about me to spread around the neighborhood. My husband threshed her husband once on account of some questionable deal, and even though her husband has since left her, she has never gotten over it. Now that I am alone she tries to avenge herself on me. She is a regular cat; that's all, a regular cat." And Mrs. Martin's agitation was sufficient to warrant Mill John's conclusion that serious trouble between the two women might have occurred; that, in fact, this affair might even have something to do with the widow's determination to move.

With a few more observations and inquiries, therefore, he finally excused himself, assuring the Widow of his intention to consider the matter for a time and see her again very shortly, when he might possibly be in a position to make her a defintie offer. With her most gracious smile, she offered her hand, and John found himself holding it a trifle longer than polite formality really demanded; in fact, was persuaded before he finally left to partake of another doughnut on the front steps. Then, somewhat to his confusion, he walked to the gate without his cane and parcel and had to return for them. Stammering condemnation of his own forgetfulness (he very rarely became confused), he stumbled over a flower pot while stepping backward from the porch and very nearly suffered a total loss of dignity. Then, with his ruddy color unusually heightened, he strode rapidly up the flower-bordered walk and clicked the front gate behind him. Turning for a final survey of the house, he beheld the Widow still standing on the porch. She waved a goodbye and smiled, and John, although simultaneously cursing himself for a fool, impulsively raised his hat from his heavy thatch of gray hair and waved a merry reply with it. Then, walking even more rapidly, and glancing up and down the road as though fearful of detection, he betook himself in the direction of the mill.

CHAPTER II

Late that evening he approached the same neighborhood from the opposite direction, and after making some inquiries, turned in at a small green cottage about a mile above the Widow Martin's place. Surveying from beneath his bushy eyebrows the unpleasant face which appeared in answer to his imperious knock, he felt immediate antagonism for its owner, but did not let this fact dissuade him from his purpose.

"Could ye direct me, ma'am, to th' Widow Martin's hoos?" he asked. "She advertised it in th' paper for sale, but didna give very gude directions fer findin' it."

"She lives in the fourth house on the other side of the road, about a mile down," replied the woman, and as he apparently turned to go, after thanking her for the information, she stepped out upon the porch.

"So she's advertising it for sale, is she? Well, you look like an honest man, and I am going to warn you to be careful in your dealings with that woman. She would tell lies until she had you believing that black was white."

Displaying immediate interest, Mill John turned back. "Oh, ye're acquainted with her then?"

"Acquainted with her! Well, I should say I am. I've known her many years, and there is not an honest hair in her head. She won't tell you about the alkali in that land of hers, but let me tell you, there's a streak across the lower end where they've never raised anything. I'm not going to stand by and see anyone swindled by that hussy. And what's more, there's hard-pan under the whole place, and those fruit trees won't ever bear or grow any larger than they are now; they'll be dead in another two years. She won't say anything about those things. And I'll bet she won't point out that the foundation is settlin' under the southwest corner of the house. You won't see the crack in the wall unless you go down in the cellar, but you be sure to insist on going down there. And there's another thing—she hasn't had that well cleaned out in years, and it's so choked up now that they don't get enough water for the house, much less for irrigating. She probably won't mention that, either. I'm giving you this information because I don't want to see an unscrupulous woman take advantage of anybody. It doesn't mean anything to me, of course. But——" (and here she lowered her voice) "do you know there has even been some talk about her character. They say that several times she has entertained——"

"It looks a little like rain," interrupted John suddenly. "I must be hurryin' on my way. Thank ye, ma'am, for directin' me." And he departed so suddenly that an observer who did not know that he had merely obtained some desired

(Continued on Page 37)

This Short Story

Is published in response to numerous requests from our readers for some entertaining fiction. We believe that you will find this account of the affair between Mill John and the Widow Martin interesting and wholesome reading. It merely proves the well-known rule that "the older they are the harder they fall," and shows how liable to disillusionment is the man who thinks he has reached an understanding of the eternal feminine.

You probably have read stories by Mr. Jameson before, and will appreciate how fortunate we are in being able to secure his work for Orchard and Farm. We hope to publish more of it in future numbers.

CAN THE MOLINE-UNIVERSAL TRACTOR CULTIVATE?

FARMERS FROM FOURTEEN STATES SAY *YES*

These Questions were asked the following farmers who own Moline-Universal Tractors and Two-Row Cultivators. Read how they answer them.

1. Has it been your experience that the Moline-Universal Tractor and Two-Row Cultivator do a good job of cultivating?
2. Will it handle your young corn as well as lay by?
3. Is it as steady as horses, particularly at the lower speeds?
4. How many acres do you cultivate in a 10-hour day?
5. Do you get as good or better corn (or other crop) cultivating with the Moline-Universal Tractor as with horses?
6. Do you find that the tractor will injure the soil by packing?
7. Will it knock down any more stalks at the ends turning than horses?
8. Do you consider the Moline-Universal Tractor and Cultivator a labor saving and economical method of cultivating?
9. How many acres do you farm?
10. How many acres in row crops on which you used the Moline-Universal Tractor and Two-Row Cultivator?
11. What crops did you cultivate in this manner?
12. How many horses or mules have you been able to do away with because the Moline-Universal can cultivate?
13. How many horses or mules do you still keep.

	1	2	3	4	5	6	7	8	9	10	11	12	13	
C. R. Barr Wyconda, Missouri	Yes	Yes and do a better job	It is	15-22	No difference	No	Not if particular	I do	205	130	Corn	4	2	I don't think we could farm without the Moline.
C. Hendnx Rushville, Indiana	Yes	Yes	Yes	15-20	As good	No	No	Yes	240	75	Corn	2	5	If we had not had the tractor would never been able to farm as much land.
Herbert Bowman Union City, Indiana	Yes	Prefer young corn	More so	20	Better	No	Not as much	Yes	120	35	Corn	2	3	Could dispose of one more horse.
J. E. Carey Wilmington, Ohio	Yes	Can't cultivate young as fast as old	Steadier		No difference	No	No more if as much	It has been first year	300		Corn	4	7	If I hadn't had the tractor I would have kept 4 more horses, which are a bigger expense than the tractor.
E. E. Fletcher Krum, Texas	Yes	Didn't use it on corn	More so	12-14	As good	No	Yes	Same when in use	500	100	Cotton	*	0	Cultivate ⅓ more per man. All the work done by two Molines. No horses used.
H. Brun Corning, Kansas	Yes	Yes	Yes	20	Just as good	No	Not as much	Yes	200	120	Corn	6	6	I find the tractor will do all you claim for it, and then some if taken good care of.
Nick Eller David City, Nebraska	Yes	Yes	Steadier	12-20	Just as good	No	No	Yes	210	50	Corn	2	4	Saved enough feed to pay for gas and oil.
Ed. Finnegan Bradford, Illinois	Yes	Yes	Yes	15-30	Sometimes better	No	Not as much as 3 horses	Yes	235	125	Corn	5	5	Rented 35 acres extra corn ground, crops paid for tractor.
F. H. Pence Brinkham, Oklahoma	Yes	Better than team	Better	14-18	Better	No	No	I certainly do	200	50	Cotton and Maize Corn	*	0	I would not farm if I had to go back to horses and mules.
Elmer G. Scheff Nevada, Ohio	Does good job	Didn't use it to finish with	Absolutely yes	15-18		Not if ground is fit for horses	Not as much	Yes	120	30	Corn	2	3	A person doesn't have to sit on implement and let the Moline rest.
M. V. Bartlett Muncie, Indiana	Yes	Yes	Yes	15	Yes	No	No	Yes	230	100	Corn	4	4	It has no equal as a preparer of soil for planting.
W. H Morris Windside, Nebraska	Yes	Yes	More so	16	Yes	No	Less	Yes	160	60	Corn	3	2	I have ditches in my field that I crossed with it, I never could with horses.
Edward Bilshas Framingham Center, Mass.	Yes	Yes	Yes	10 in small fields		No	Depends on width of headland	Yes on fields larger than 6 acres	73	14	Corn	0	3	Tractor saved a whole lot of time.
Alva West Harpster, Ohio	Yes	Yes	Yes	18	Yes	No	Not as much	Yes	253	45	Corn	8	4	I have done the work of 2 men and 6 horses by having a Moline.
G. W. Beard Waterbury, Connecticut	Yes	Yes	Yes		Just as good	No	Not with a good man driving	No	200	18	Corn	0	4	The only tractor for the East and would advise and certainly buy no other.
Glenn Richard Rutledge, Missouri	Splendid	Yes	More so	16	Fully as good	No	Not as much as a team	I do	200	50	Corn	4	3	Farming without the Moline would be too slow for me.
Fred Pabst Oconomowoc, Wisconsin	Yes	Yes	Yes	9- 11	No difference	No	No	Yes	1400	80	Corn	0	18	That the tractor is satisfactory is indicated by the fact that we ordered a second one.
George Slacksleger Lewisburg, Ohio	Good	Yes	Yes	20	Yes	No	Not as much	Yes	140	40	Corn	3	2	It saved a hand and three horses.
W. H. Hamilton Decatur, Iowa	Yes	Yes	Yes	15	Better	No	Not as much	In hands of experienced man	250	120	Corn	5	4	With it we were ahead of the crops.
Chas C. Walker Blythe, California	Certainly does	Yes	More	18-24	Same	No	No	I do	80	80	Cotton	*	0	I would not farm in this country without a Moline.
J. C. Wilmer Des Moines, Iowa	Yes	Yes	Steadier	12-17	Better	No	No	Yes	360	220	Corn	4	6	One man can do two men's work.
Harley A. Mishler South Whitley, Indiana	As good as horses	Didn't have it for small corn	Better a dozen times	20	Just as good	No	No	Yes	185	41	Corn	4	4	I cultivated when neighbors with horses had to quit because of the heat.
Marion Ellingwood Fairmont, Indiana	Yes	Yes	Steadier	17-18	Better	No	Not with right man	Yes	166	60	Corn	4	4	We do all our hard work with the Moline and keep our horses fat on half the feed.
Quincy Gwynn Bellefontaine, Ohio	Yes	Yes	Yes	8-15	Believe so	No	No	Yes	200	40	Corn	3	3	Got my crops in and tended them in good time when it was impossible to get help.
Chas. Lanning Brookville, Indiana	Yes	Yes	Yes	10-12	Yes	No	About the same	Yes	100	35	Corn	3	2	Found your tractor to be what you claim.
J. E. Roberts Platte City, Missouri	Yes	Yes	Yes	15-18	Yes	No	Not with experienced operator	Yes	284		Corn	6	8	Kept cultivator running every day in season.
Chas. E. Bietz Harmsville, Indiana	Yes	Like it best for small corn	Yes	18-24	No difference	No	No	Yes	216	75	Corn	4	4	I have done all jobs on the farm.
Howard Erbank Rushville, Indiana	Yes	No cultivator will	Yes	16	No difference	No	No	Labor saving	240	70	Corn	1	5	I claim the Moline is the most practical tractor if not the only practical tractor for Indiana farms.
Levert Geer Woodstock, Ohio	Very good	Yes	More so	16-18	Just as good	No	No	I do	150	60	Corn	3	2	A Moline for mine every time. It is the only real all work tractor.
L. E. Bloomquist Wausa, Nebraska	Better	Just as well	Steadier	18-19	Better	Not as much	Not as much	Yes	320	160	Corn	6	4	Plowed 80 acres in 6½ days. There was a 3-plow tractor right by my side and I plowed faster and deeper.
Walter Duke Rushville, Indiana	Yes	Yes	Yes	12-20	Better	No	No	Yes	246	75	Corn	5	4	Moline means more, quicker and better work with less help and expense than any other farm power.
M. B. Myers Harpster, Ohio	Yes	Yes	Yes		Better	No	Less	Yes	335	51	Corn	2	5	Tractor is indispensable, has great capacity for work.
Jas. R. Wilson Buckeye, Arizona	Fine job		Steadier	20	Better	Not at all	A little more	Absolutely	140	100	Cotton and Maize Corn	4	2	The new Moline is far and away the best light tractor ever put out.
Hare Bros Wilmington, Ohio	Yes	Yes	Steadier	10-15	No difference	No	Not as many	Yes	180	95	Corn	3	5	We feel we would have to quit farming if it wasn't for the Moline.
J. R. Wicks Guthrie, Oklahoma	Yes		More so	12-14	Can do better work	No	Did at first not now	Yes	320	160	Corn, Cotton, Potatoes, young Peach trees	3	3	Besides cultivating I plowed 110 acres, cut 50 acres of oats, drilled 35 acres of wheat and 20 acres of cane.
Average									247	74.2	30% in row crops	4.1	4.17	* The number of horses replaced was not given. One horse was allowed for each 30 acres.

An average of 50% of all the horses on the above farms was displaced because the Moline-Universal Tractor cultivates—the number of horses was reduced to one for each 59.2 acres. According to United States Department of Agriculture one horse is required for each 20 to 30 acres, and the ordinary tractor does not reduce the number of horses. Remarkable as this showing is, still better results can be obtained. Ten of the farmers above farm 112 acres per horse because the Moline-Universal cultivates and does all farm work. Three farmers displaced horses entirely. Is this possible with any other tractor?

These are not exceptional farmers; many others are getting results equally satisfactory with the Moline-Universal Tractor. And you can do the same.

Remember the Moline-Universal Tractor *does all farm work* as well as cultivating. With it you can plow 9 acres a day, double disc 27 acres, harvest 30 or 40 acres. It has plenty of power for all ordinary belt work. And one man operates both tractor and implement from the seat of the implement.

We build a complete line of implements to work with the Moline-Universal Tractor, all equally as satisfactory as the two-row cultivator.

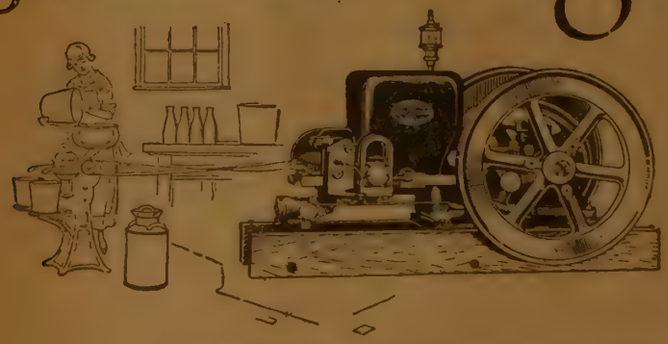
See the Moline-Universal on display at your nearest Moline Tractor Dealer, or at our factory branch in the following cities:

Atlanta, New Orleans, Dallas, Oklahoma City, St. Louis, Poughkeepsie, Baltimore, Los Angeles, Stockton, Spokane, Portland, Salt Lake City, Denver, Kansas City, Omaha, Minneapolis, Minot, Sioux Falls, Des Moines, Bloomington, Ill., Indianapolis, Columbus, Jackson, Mich.

Ask for Folder, R. F.-44, which fully describes how to cultivate with the Moline-Universal Tractor. Address Dept. 48

MOLINE PLOW COMPANY, MOLINE, ILL.

See this New "Z" Engine



IT is a 1½ H.P. "Z" Farm Engine—recently perfected after three years of experimental work and successfully uses

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This completes a line of farm engines—1½ H.P. to 15 H.P.—all of which efficiently operate on this economical fuel. Over 15 million dollars worth of "Z" Engines on the farms of over 200,000 keen farmer buyers—are proving to their satisfaction that buying a "Z" from their local dealer resulted as our advertising promised.

Also runs on Distillate Coal Oil Tops or Gasoline

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Prices—1½ H.P. $61.00—3 H.P. $100.00 — 6 H. P. $179.00 — F. O. B. Factory

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BEES PAY

Bee-keepers can obtain from the Apiary Department of the Diamond Match Co. the finest quality of Bee-Keepers' Supplies at fair prices.

The Apiary Department, which is in charge of experienced Bee-Keepers, is one of the largest of its kind in the United States and maintains a constant excellence of product and unsurpassed service.

Write for catalogue and if a beginner for Cottage Bee-Keeping, which will be promptly mailed free.

THE DIAMOND MATCH CO.
APIARY DEPARTMENT
CHICO, CALIFORNIA, U. S. A.

Special Sale Order No. 91, March, 1919, for Orchard and Farm Trade.

	Regular Price	Special Price
4 lb. Prunes or 12 large Oranges	.45	.25
5 lb. Table Salt	.20	.10
5 lb. Mixed Beans or 3 lb. Best Rice	.35	.20
1 2-lb. Can Asparagus	.30	.23
1 lb. Can Crisco	1.35	.78
1 lb. Fancy Mixed Tea	.75	.40
1 9-lb. Bag Best Flour	.72	.58
1 lb. Ambro Substitute for Coffee or Chickory	.25	.15
1 Pint Jar Mustard	.25	.15
3 Cans 8 oz. Fancy Sardines (Mustard, Tomato or Oil)	.54	.36
3 Golden Egg Noodles	.30	.20
2 Pkg. Corn Flakes	.25	.15
1 lb. Best Coffee	.35	.25
3 lb. Corn Meal	.30	.20
1 lb. Ground Chocolate	.30	.24
12 Boxes Safety Matches	.10	.06
1 Bot. Vanilla or Lemon Flavor Extract	.10	.09
1 1-lb. Douglas Oil	.40	.32
3 Cans Tamales or Ravioli	.30	.24
1 Can Pepper	.10	.09
	$6.66	$4.54
Saving		$2.12

The weight of order is 50 lbs. Sent by parcel post only. Send cash and postage. It may be returned at our expense if not entirely satisfied. Reference, Orchard and Farm.

DEL MORRIS SALE CO.
2220 Mission, San Francisco.

Desert Orchardist's Troubles

(Continued From Page 10)

duction of grain hay, however, presented more serious difficulties.

Some success was met with in planting Egyptian corn, but best results were obtained, after much experimenting, with Mexican June corn, plantings of this variety having produced with sufficient irrigation, stalks 12 feet high and a yield of 40 bushels of grain to the acre—this at an altitude of 3000 feet. Seeking still another source of feed, capable of supplying succulence, this enterprising farmer finally hit upon artichokes as his "best bet." Such enormous crops were grown that it seemed almost impossible, he says, to dig the tubers all out. In fact, enough seed remained in the ground to produce a heavy volunteer crop the following spring, and the heavy growth of stalks provided considerable of the necessary green manure.

Hogs as Harvesters

Realizing that the best way to harvest the artichokes would be to give his hogs the run of the patch, this man developed a unique plan. He made from heavy woven wire about a dozen tree protectors, which could be forced slightly into the ground around each tree and fastened, by means of baling wire, around the young trunks and lower branches. These protectors were nothing more nor less than pieces of ordinary fence netting, heavy enough to resist the hogs and cut large enough to envelop the lower part of the tree when rolled into cylindrical shape, with the edges brought together and wired. Since the artichokes were planted among young near trees, which had been closely pruned and from which no low branches spread out, the shape of the trees made the use of these cylindrical protectors entirely feasible. In order to prevent bruising of the trees when the hogs rubbed against the wire, however, it was necessary to brace the top of the protector away from the tree with pieces of wood.

A Profitable System

Although apparently rather complicated, this system of protection when applied to small numbers of trees, required only a few minutes' work. By means of portable panels, a temporary pen was constructed around the protected trees and a few of the hogs turned into the artichokes. When this patch was cleaned up, they were moved to another, and so on, until all the roots had gone into the making of pork.

The hogs not only harvested the artichokes but fertilized the area in which they were confined and gave the soil as thorough a cultivation as could be rendered with implements. In fact, it was necessary only to follow them up with a harrow in order to put the ground in good shape.

Every available bit of manure from stable, hog-lot and chicken runs is used by these desert farmers; the results are already becoming apparent, or in most cases the blowing has been almost entirely stopped and the quality of the soil improved 50 per cent. Green manure crops are used continually, and even a volunteer crop of Russian thistles, when it can be plowed under to assist in improving the physical nature of the soil, is regarded as a blessing rather than a pest.

Having anchored his top soil to mother earth and successfully resisted the attempts of the wind to transport it to parts unknown, the desert orchardist has not yet solved his peculiar problems, for even the best windbreak cannot prevent entirely the effect upon young trees of the ungentle "zephyrs," which are as certain in their movements and frequency as ase rising and setting of the sun. Special attention must be given to prevent the bending of trees and limbs away from the wind; in spite of the observance of every precaution, in fact, most of the trees show a distinct inclination towards the north. Much can be done, however, to offset this condition, which is certain to be met with, while both trees and windbreaks are young.

How It Is Done

At Rancho del Desierto it is customary at pruning time for two men to work together. At this time the trees are straightened. One man does the cutting, while the other follows, with a supply of Bordeaux mixture and pruning compound or paint, treating all abrasions and painting in each case only the windward side of the trunk with the paste. A brush having been found unsatisfactory for its application, the operator smears it on thickly with his fingers. In addition to covering such abrasions or cuts as have been made by the blowing sand or other agencies, the paste forms a protective coat on the side of the trunk which receives the brunt of the gales. Having thus treated each tree the pruner's assistant places small sticks of wood as braces between the trunk and those limbs that have begun to bend in towards the center. These braces are usually made from pieces of canes cut out by the pruner, or from small bits of pine board. Care must be observed in placing them in order not to force the shoots out to the point where splitting will occur, while still giving the braces security enough to prevent their dislodgment by the shaking of the tree.

Straightening the Trunk

This treatment holds out the small limbs, but of course has no effect on the trunk of the tree. While the trees are young and not deeply rooted it is possible to push them back into position easily with the hand. This work is done before irrigation, a piece of board about 6x10 inches in size being placed against the base of the trunk on the side towards which it is leaning. The board is half buried in the soil in order to hold it in place, and the tree pushed back into normal position. In order to prevent the board from slipping, some of the wet soil available after the irrigating water has been turned down the row, is packed firmly against and over it. Simple and apparently ineffective as this treatment may seem, it serves in a large measure to prevent excessive

(Continued on Next Page)

leaning until the trees are well rooted. Pruning is done, partly, of course, with a view of correcting this tendency to lean away from the wind and also with the idea of developing a sturdy trunk and low top as quickly as possible, even though fruiting be delayed a year.

The wind is, in fact, the controlling factor in nearly all orchard operations in this section. Irrigation, pruning, harvesting, cultivating—all are to some extent affected.

Every Advantage Taken

Many little schemes and devices are used in conjunction with these more important methods. For example, one grower plants a few kernels of his grain seed immediately at the base of each tree trunk, especially on the southwest side, towards the wind. The mere presence of the stalks of grain which grow from this seed and which are allowed to remain when the hay is cut, does much to stop the action of sand-particles, as well as to shade the tree from the blistering sun. Frequently the irrigator, losing no opportunity to assist the trees, digs up with his shovel a promising "stool" or clump of grain and deftly transplants it beside a tree, where it grows tall enough to afford soem slight shade and protection. It is planned at Desierto Rancho to set out on all terraces and ridges and on the reservoir banks, a large number of berry bushes, which are expected rapidly to "take hold" and prevent blowing, as well as furnishing fruit to attract the birds away from the orchard trees. These are little things, to be sure, but there is no place where one could more aptly apply the ancient assertion that "every little bit helps."

A Yucca Tree

Fine Quality Fruit

Pessimistic comments have been heard as to the probable effect of the wind upon young and ripening fruit, but experience in similar districts has shown that by the time the trees are bearing, the wind-breaks afford ample protection. Of course some slight damage is sure to result, but it is pointed out that just prior to and during the harvest the district is most free from strong air currents. Pears and apples already marketed from this section have commanded a premium because of their flavor and size. Freedom from tree and fruit diseases and pests has so far compensated these pioneer desert orchardists to some extent for their peculiar climatic hardships.

Some of them, too, seem to have found compensation in newly acquired robust health and in the mysterious haunting beauty of the "painted desert," which although apparently desolate and forbidding, holds within its heart many secrets which can be unlocked only by the application of water. Apparently, too, the desert country has the ability to win and hold the hearts of those who select it for an abiding place.

But not for sentiment alone have hardships been endured. Material reward is not remote, as attested by the sale of 2500 boxes of premium fruit from one seven-year-old orchard this fall, and the transfer of an improved six-year-old place of 40 acres, for the sum of $35,000. There must indeed be a real "ship of the desert," for each of these courageous pioneers can truthfully say after years of patient waiting, "his ship is coming in"—coming with all sails set and with choicest riches laden.

Does *all* the Seed-Bed Work

In the important work of preparing the seed-bed, the Cleveland Tractor *does more than merely plow.*

Any tractor will plow.

But the Cleveland because of its track-laying construction travels *on top* of the soft plowed ground with harrow, seeder or other implements.

It does its work rapidly and economically *under conditions most difficult for the ordinary machine.*

The Cleveland, with its tremendous traction surface, *rides on top* of the ground like the great battle tanks—*without wallowing, sinking in or packing down the soil.*

The Cleveland uses its power *to pull the implement*—not to pull *itself* out of the ground. That is one reason why it operates on so little fuel.

The Cleveland will pull a roller over your young wheat *without injuring the crop.*

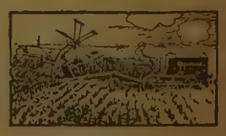
It does the hauling, the manure spreading, the ensilage cutting, the stationary engine work and the hundred and one *other* things that every farmer expects a tractor to do.

And it does the work *better,* as well as faster than before.

Orders for spring delivery should be placed *now.* Write for booklet and name of nearest Cleveland dealer.

The Cleveland Tractor Co.

19081 Euclid Ave. Cleveland, Ohio



The largest producer of track-laying tractors in the world

Cleveland Tractor

Dealers of Southern California who handle this Cleveland Tractor and who have reasonable and efficient service of users:

Our Dealers in Southern California:

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SMITH BROTHERS

1616-18-20-22-24 SOUTH FIGUEROA ST.
LOS ANGELES

—in cans only

Ghirardelli's Ground Chocolate is so good—so pure—and so rich in nutriment that it deserves nothing less than this quality-sealed can. That is why Ghirardelli's is not sold in bulk, dry or instantly.

In ½ lb., 1 lb. and 2 lb. cans—at the store where you do your trading.

Say "Gear-ar-delly"

D. GHIRARDELLI CO.

Since 1852 San Francisco

Ghirardelli's Ground Chocolate

When answering advertisements, always mention Orchard and Farm.

Learn the facts about America's greatest farming opportunity

Our big, free, fully illustrated booklet tells all about this wonderfully fertile valley near Tucson, Arizona, where **farmers are becoming rich.** It contains signed statements by two actual settlers. You can write and verify everything they have said. Only 20% of the foodstuffs consumed in Tucson and adjoining mining districts is produced in the valley—the other 80% is **shipped in from California and other outside points.** Local farmers command fancy prices for everything they can raise. Soil is deep, rich, silty loam; water supply abundant; climate ideal; no drawbacks—only fine advantages. Land with water, $150 an acre; attractive terms. Farmers, investigate!

Edwin R. Post Company

TUCSON, ARIZONA

Write today for this Free Booklet—

What and When in the Garden

BLISTERED hands and sunburned necks are seen forgotten, now we, however, delicious vegetable flavors and succulent salads, roasting ears, creamed corn, luscious sweet potatoes, green peas and cool melons. With the memory of last season's success fresh in their minds, young and old California gardeners are again enthusiastically spading and raking and planting and cultivating and irrigating. The ending of the war has not dampened gardening enthusiasm. This year bids fair to be a bigger year in the home growing of food.

If you were bitten by the gardening bug, you have probably been enjoying a succession of winter vegetables. At any rate now is the time to prepare for the big spring drive. If you have not already prepared the soil, begin at once by giving it a good soaking to a depth of at least two or three feet. Don't try to work and plant in dry soil. As soon as it can be spaded and pulverized, dig 10 to 12 inches deep, put stable manure into alternate furrows and turn it under. It is advisable, if lime and chemical fertilizer are to be used, to add them at this time along with the manure. Then pulverize the soil thoroughly and rake it evenly.

Hints on Planting

While it is still moist plant your seed from one-fourth inch to one inch deep. Too deep planting, especially of the finer seeds, is the cause of many gardening disappointments. A good general rule is to plant seeds at a depth equal to 3 to 5 times their diameter. It is better, also, to plant rather thickly, as a large number of seeds can better raise the top crust of the soil than can a few. It is always easy, moreover, to thin the plants as necessary.

Never sprinkle a new garden before the plants are above the ground, nor afterwards if you can irrigate between the rows. Row irrigation, followed by thorough cultivation and weeding, is the safest and most satisfactory method. To allow the soil to bake after irrigation is just as much a mistake as not to irrigate when necessary. It is better to irrigate less often and thoroughly than to sprinkle lightly at frequent intervals.

A good general method of laying out a garden is to make ridges about six inches high, 30 inches wide on top and 42 inches apart. Plant double rows of seed or plants on these ridges, irrigating and cultivating between them. This method, as used by most market gardeners, may well be followed by the home gardener, especially if he has sufficient ground to warrant the use of a wheel hoe. The following vegetables, especially, are adapted to this method: Beet, chard, carrot, kohlrabi, lettuce, onion, parsley, parsnip, radish, salsify, spinach, turnip.

The Better Way

Many gardeners who have been gathering experience during the past two seasons will plant much larger plots this year than they have been using. They will tend these gardens with less labor than they expended on much smaller plots, by planting in long, straight rows and using the wheel-hoe for preparation of the ground, planting and cultivating. They will, moreover, provide a succession of vegetables by planting at intervals of a week for a period of several weeks. Many vegetables are thrown away every year because of too extensive plantings of each variety.

Another lesson which has been well learned by most novices is that the gardener must always be just a little ahead of the pests. Preparation by the assembling of the necessary chemicals and by inspection and repair of the sprayer is merely one form of crop insurance.

Time to Plant

Last year many gardeners made the mistake of commencing work too late in the spring. While the territory covered by Orchard and Farm does not permit of the formulation of definite planting dates for all vegetables, it is advisable to get everything in as early as possible in order to escape the heat of summer. In the south, in fact, many spring gardens are already well along. Except in the colder sections, the vegetables listed in the following table may safely be planted this month:

VARIETY	Seed for 100 ft. row	Distance Between Rows	Distance Apart in Row	Crop Matures
Artichoke, Globe	2 Plts.	5 ft.	3 ft.	2nd spring
Artichoke, Plants	32 Plants	3 ft.	3 ft.	Next spring
Asparagus Seed	½ oz.	6 ft.	3 ft.	Third spring
Asparagus Plants	32 Plants	4 ft.	2 ft.	Next spring
Bean, Beet	½ lb.	3 ft.	6 in.	2 to 3 months
Beans, Pole	¾ lb.	3 ft.	1½ ft.	2 to 3 months
Bean, Table	½ oz.	2 ft.	4 in.	3 to 2½ months
Beet	1 Pkt.	2½ ft.	1 ft.	2½ months
Brussels Sprouts	2 Plts.	2½ ft.	1½ ft.	5 months
Cabbage, Early	1 Pkt.	2½ ft.	2 ft.	3 to 4 months
Cabbage, Late	1 Pkt.	2½ ft.	2 ft.	4 to 5 months
Carrot	1 oz.	24 in.	6 in.	4 months
Celery	2 Plts.	3 ft.	6 in.	4 to 5 months
Chervil	3 Plts.	30 in.	6 in.	2 months
Chives	2 Plts.	30 in.	5 in.	3 to 4 months
Cucumbers	1 Pkt.	30 in.	10 in.	4 months
Chicory	2 Plts.	30 in.	6 in.	2 to 3 months
Corn, Salad	½ oz.	30 in.	6 in.	2 to 3 months
Corn, Sweet	½ lb.	36 in.	12 in.	2½ to 3 months
Cucumber	1 Plts.	6 ft.	4 ft.	2 to 3 months
Egg Plant	1 Pkt.	30 in.	2 ft.	4 months
Endive	1 oz.	30 in.	6 in.	3 months
Garlic sets	1 lb.	24 in.	6 in.	3 to 4 months
Horse Radish	70 Plants	24 in.	18 in.	6 months
Kale	2 Plts.	30 in.	18 in.	2 to 3 months
Kohlrabi	1 Pkt.	30 in.	6 in.	4 months
Leek	½ oz.	24 in.	6 in.	4 months
Lettuce	3 Plts.	24 in.	8 in.	2 to 3 months
Melons, Musk	2 Plts.	6 ft.	4 ft.	3 to 4 months
Melons, Water	1 oz.	6 ft.	6 ft.	3 to 4 months
Onion seed	½ oz.	24 in.	3 in.	4½ to 6 months
Onion sets	1 lb.	24 in.	3 in.	2 to 4 months
Onion seed for sets	2 oz.	2 ft.	Drill	2 to 3 months
Parsley	1 Pkt.	24 in.	6 in.	3 months
Parsnips	2 Plts.	30 in.	6 in.	4 months
Peas	1 lb.	36 in.	3 in.	2 to 4 months
Pepper	1 Pkt.	30 in.	18 in.	3 to 4 months
Potatoes	5 lbs.	36 in.	12 in.	2 to 3 months
Potatoes, Sweet	70 Plants	36 in.	18 in.	3 to 4 months
Pumpkin	2 Plts.	30 ft.	8 ft.	3 to 4 months
Radish	1 oz.	12 in.	3 in.	1 to 2 months
Rhubarb	2 Plts.	3 ft.	2 ft.	2nd spring
Rhubarb Roots	32 Roots	3 ft.	2 ft.	Next spring
Salsify		20 in.	4 in.	4 months
Spinach	1 oz.	24 in.	2 in.	40 to 45 days
Squash, Bush	2 Plts.	4 ft.	3 ft.	3 months
Squash, Running	2 Plts.	6 ft.	6 ft.	3 to 4 months
Tomato, Seed	1 Pkt.	5 ft.	3 ft.	4 to 5 months
Tomato, Plants	32 Plants	5 ft.	3 ft.	3 to 3 months
Turnip	2 Plts.	24 in.	6 in.	3 to 4 months
Turnip Sweet or Rutabaga	2 Plts.	24 in.	8 in.	3 to 4 months

Sunflowers

A Woolly Tale

I know a man who has a ranch
On which he raises sheep,
Nor cares for any other branch
Of farming. Will not keep
A pig nor cow, nor horse. They say
What'er the "wether" when
He makes a deal, he'll find a way
To "fleece" his fellow-men.

He always laughs at Mutton Jeff.
A big hydraulic ram
Pumps all the water, and his chef
Serves naught but leg of lamb.
His hired man, with mutton chops
The ewe-calyptus trees,
And with a buck-saw trims the tops
For fire-wood, lest he freeze.

He likes to spin a woolen yarn,
And sheep-nose apples grow
Upon his trees, while 'neath the barn
The howling sheep-dogs go,
When Master's on a mutton-stew
And with his sheep-lined boot,
Gives each poor pup a jolt or two
While working off his toot.

He went to college, sheepishly—
And took some P. H. D's,
Just to get the sheepskins he
Received with high degrees.
Oh, many will be sorrowful
And wiser e'er he dies,
For no one yet has pulled the wool
O'er this old codger's eyes.

Mosquito Killer

The editor of an Illinois paper is a public benefactor and when he dies the people of his county ought to erect a monument to the honor of his memory. He has discovered a new way to get rid of mosquitoes. He tells you simply to rub alum on your face and hands. When the mosquito takes a bite it puckers his gasoople so it can't sting. Then it sits down in a damp place, tries to dig the pucker loose, catches its death of cold and dies of the "flu."

Kind and Considerate

My daughter is the kindest-hearted girl I have ever known," commented Mrs. Workleigh, with motherly pride. "Why, I have known her to stay in her room all day Monday and Tuesday just because she couldn't bear to see her poor old mother wash and iron."

"I understand Jones was stung on his bee venture."

"Yes, and that isn't all! When he got rid of the bees he bought what he thought was an orange grove, but it turned out to be a lemon."

Cots or Apricots?

"Telephone the nursery and tell them to send a hundred 'cots' of the same variety I got before out to the ranch at once," said the busy banker-orchardist as he rushed out of his office to keep a business appointment.

His new stenographer did not attempt to argue with the irate party at the other end of the wire, but when she went out to lunch a little later left a note on her employer's desk:

"The lady in charge of the nursery said she had no time to converse with lunatics, and besides they have never had more than twenty cots, and have two kids in each one now, and they wish some man with more money than brains would send THEM about a hundred."

J. I. CASE PLOWS

IN J. I. Case Tractor Plows the "drag" of furrow bottom and land slide pressure has been eliminated. All the weight of the frame is carried on J. I. Case dust-proof, easy lubricating, long-distance wheels.

That's why this Tractor plow "rides" like a wheeled vehicle instead of dragging like a stone boat. That's also why more acres per day and deeper plowing are possible—and extreme fuel economy is attained.

In addition, the J. I. Case Tractor plow is easily handled from the seat of the tractor; has a simple, sturdy power lift; and enters and leaves the ground instantly, points first, like a walking plow. Thus less labor is required and a more uniform quality of work is done. The Tractor is made a more profitable investment.

See your J. I. Case dealer today. He is a dealer who will justify your faith as well as ours.

J. I. CASE
Horse Drawn Plows
Sulky, Gang, Walker models. World's lightest draft. Flexible beam and "floating" bottom insure uniform penetration and prevent shares from breaking. Strong, dependable, convenient.
See your J. I. Case dealer or write us.

J. I. Case Plow Works
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RACINE, WISCONSIN

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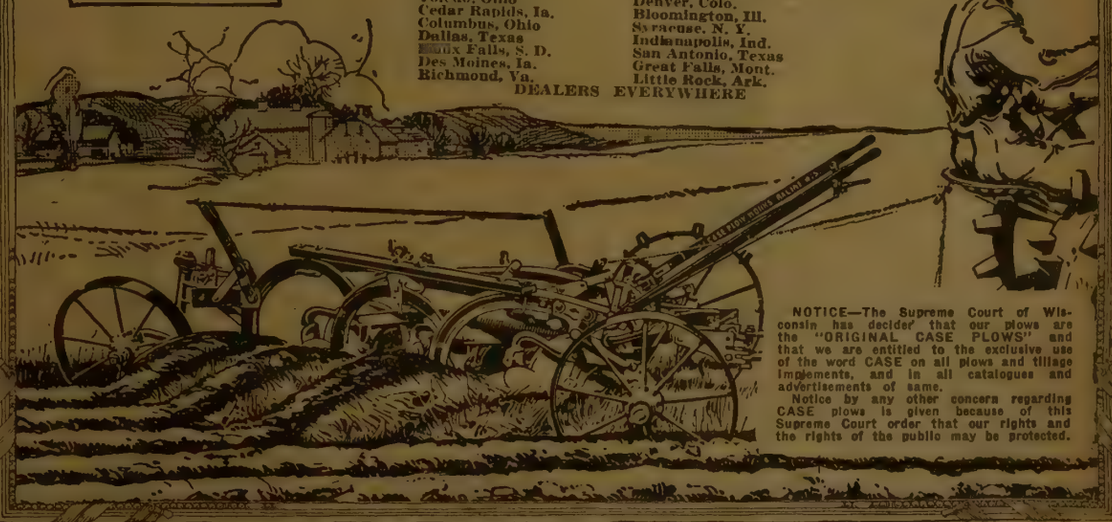
DEALERS EVERYWHERE



NOTICE—The Supreme Court of Wisconsin has decided that our plows are the "ORIGINAL CASE PLOWS" and that we are entitled to the exclusive use of the word CASE on all plows and tillage implements, and in all catalogues and advertisements of same.

Notice by any other concern regarding CASE plows is given because of this Supreme Court order that our rights and the rights of the public may be protected.

MY FRIEND, STEVE

My friend, Steve, ain't much on looks
With legs like poles and hands like hooks.

Number ten shoes and a twenty-nine chest
When he walks north one foot points west.

His starboard ear is lower than the port
One arm's long and the other arm's short.

With his number eight head on a number twelve neck
He's a number one feller, jest th' same, by hek.

—*Justin Nutt*

Hail, Joyous Spring

This is the kind of weather that puts the spring into spring-tooth harrows, and knocks the bottom out of two-bottom plows. It causes the stalk-cutter to cut up and the disc harrow to let out harrowing shrieks. Yes, spring is here, and the binder binds in several places, the silage is low in the silo, and the farmer is just a little ahead of his overhead. It's a busy season!

Over $100. Only Two Months More!

In this issue appear a number of contributions sent in by readers to be entered in the **PRIZE CONTEST.** This contest will close May first, and if the judges complete their work in time the winners will be announced in the May issue.

We Want New Farming Facts

We realize that the best place to get them is from the readers of this magazine, who are continually making discoveries in their business which will be of interest to others.

The First Prize is $50; second prize, $25; third, $15; fourth, $10; fifth, $5. The judges will be University of California experts.

Write about your poultry, livestock, tractor, shop, implements, field crops, irrigation, drainage, household helps, rabbits, fruit trees, marketing methods—in short, anything which you think will be helpful and interesting to other readers.

Photographs or drawings appreciated, but not required. Mark your communication with the words "For Prize Contest" and give your full name and address. Send the letter to The Editor, Orchard and Farm, Los Angeles, California. Live and let live; help the other fellow; perhaps his suggestion in turn will be a money maker for you.

Important Discoveries About Orchard Pollination

By Warren P. Tufts

Written Especially for Orchard and Farm

THAT certain of our deciduous fruits should not be planted in solid blocks of a single variety is now a generally recognized fact. It is better in order to secure the benefits to be derived from cross-pollination of these fruits to plant two varieties adjacent to each other. In other words, certain kinds of fruit are "self-barren" and with these it is necessary to interplant other varieties of the same kind which have been found by experiment or experience to be "inter-fruitful" with them.

For the purpose at hand, we may define as "self-fruitful" those varieties which will mature fruit without the aid of the pollen of another variety, and as "self-barren" those on which no fruit is produced unless pollinated by another variety. In the case of some fruits, notably the sweet cherry and the almond, certain varieties may be termed "inter-barren" in that they are incapable of producing fruit when they pollinate each other. The term "inter-fruitful" is naturally used as opposed to that of inter-barren.

The Orchardist's Best Friends

After having planted inter-fruitful varieties, the orchardist should by all means provide an agency for the transfer of the pollen from trees of one variety to those of another. The common honey bee is by all odds the best carrier of pollen, and it will pay the grower to keep bees even though he might not care to go into the honey business. (See Univ. of Calif. Agr. Exp. Sta. Bult. No. 291, "The Common Honey Bee as an Agent in Prune Pollination.") Bees, however, are a very profitable side line for the orchardist, especially if alfalfa fields are available after the blooming season of the fruits. About one hive of bees should be provided to an acre of bearing orchard.

In selecting varieties of fruit with a view of securing the best cross-pollination, the orchardist should choose profitable, commercial kinds, which will be not only inter-fruitful, but abundant pollen producers, blooming at the same time or at least in periods over-lapping five or six days. Preferably the varieties should come into bearing at about the same age or else there may be several unprofitable years before the pollenizing variety begins to blossom. For the commercial orchard, too many varieties should not be planted. One kind, planted as a pollinator for the main commercial variety, if it fills the above specified requirements, will be just as efficient as several.

How to Use Pollenizers

In planting an orchard, it is desirable to have at least every sixth, and preferably every fourth row, of the pollenizing variety. In order to facilitate the management of the orchard and the harvesting of the crop, it is best to alternate two rows of one kind, with two rows of the pollinating variety. Or, if it is desired to have more of one kind of fruit then another, four rows of the favored variety may be alternated with two rows of the pollenizer.

For one reason or another it is often desirable to reduce the number of pollenizing trees to the minimum. Under these circumstances, one tree in twenty-five is perhaps sufficient, although many authorities recommend one tree in eight, and this last advice seems the safest to follow. It is seldom wise to graft only a part of a tree to the pollenizing variety, as this tends towards confusion and expense in harvesting.

If, by chance, a self-barren variety has been planted in a solid block, some relief may be obtained during the years while waiting for the trees grafted over to the pollenizing variety to come into bearing, by cutting off rather large limbs of a pollenizing variety, placing the cut ends of these in buckets of water and distributing them throughout the orchard during the blooming period. They will live for several days and while they continue in bloom, the bees will be working.

Other Important Considerations

From what has been stated above, it is not to be concluded that the simple planting of inter-fruitful varieties will assure a full crop of fruit every year. Eliminating from consideration all conditions which may influence the productivity of an orchard, except those occurring at blooming time, we may say that the "set" of fruit is influenced not only by varietal fruitfulness or barrenness, but also by weather conditions at the time of bloom. Cold weather, aside from actually killing the blossoms, very often prevents the bees from working, thus materially reducing the crop. The same conditions may be brought about by cloudy, wet and windy weather. For their best work, bees demand clear, warm, quiet days and since the weather in the spring is often quite unsettled, it is readily seen that the blooming period of the various pollenizing varieties should over-lap perhaps a week in order that there may be one or two days at least when the weather will be favorable for insect pollination.

As a case in point, we may mention the 1917 blooming season of the almonds. Many almond growers had during this season a light crop, not due to the lack of proper varieties, nor to the freezing cold, but to the existence of such weather conditions thoughout the blooming period of the almonds that the bees were prevented from working. This point further illustrates the great necessity of having in the orchard large numbers of these busy "helpers."

Diseases, such as pear blight, and insects, such as thrips, very often attack and destroy a great part of the bloom, lessening the "set" of fruit. Thus it will be seen that many agencies other than varietal reasons may affect the yield of fruit.

What Has Been Learned

It is entirely beyond the scope of this article to enumerate even the few varieties of the various fruits with which experiments have been conducted and to give in detail the desirable pollenizers for such varieties. A few general recommendations, however, should be included.

Apples and Pears

All varieties of apples and pears will be increased in productiveness if provision is made for cross-pollination, and any two varieties of either of these fruits which bloom at the same time may safely be expected to pollenize each other. A pear variety, however, will not pollenize an apple variety, nor an apple a pear.

Almond Varieties

All varieties of almonds as yet tested are self-barren. **IXL** and **Nonpareil** varieties are inter-barren, and the **Ne Plus Ultra** is inter-fruitful with both of the first named varieties. There are other cases of inter-barrenness among almond varieties.

Cherries Present Problem

All varieties of sweet cherries as yet tested are self-barren. There are also several cases of inter-barrenness among the cherry varieties, such as the **Bing, Lambert** and **Napoleon (Royal Ann).** No entirely satisfactory pollenizer for these varieties has yet been determined upon. Certain strains of the Black Republican and the Black Tartarian, however, seem to yield at least in some cases satisfactory results.

The Plum and Prune

The evidence as to the self-fruitfulness or self-barrenness of the various varieties of plum and prune is more or less contradictory. Such varieties as the **Wickson, Burbank** and **Satsuma** plums have proved to be self-barren, but the **Climax**, another Japanese plum, has proved to be self-fruitful. The **French prune** seems to be self-fruitful as long as the orchard is young, healthy and in a vigorous growing condition, but more or less self-barren as the trees approach decrepitude. No evidence of inter-barrenness has as yet been reported between either plum or prune varieties. It is advisable, therefore, to recommend the inter-planting of plums and prunes for the purpose of providing cross-pollination.

Peaches and Apricots

Although no pollination investigations have as yet been carried out under California conditions, with either the peach or the apricot, the following recommendations, based upon the experience of practical growers, appears to be entirely trustworthy. All varieties, with possibly one or two exceptions, of the peach are self-fruitful. The two leading commercial varieties of apricots, the **Royal** and the **Blenheim**, are probably self-fruitful, but considerable doubt exists as to the entire self-fruitfulness of such varieties as the **Moorpark** and **Tilton.**

Pollination experiments have been conducted by the Division of Pomology of the California Agricultural Experiment Station, during the past five seasons, but on account of the great difference in local conditions, the great number of varieties involved, the amount of time necessary for this work and the shortness of the blooming season, only a start has been made on this problem. The results, however, thus far obtained are very promising and the data already secured are worth thousands of dollars to the fruit industry of California.

A Vital Question

In fruit growing is covered by Mr. Tufts in this article. He advises us that he will be glad to correspond with interested Orchard and Farm subscribers as to the behavior of different varieties of fruit from the standpoint of pollenization. Inquiries should be addressed to WARREN P. TUFTS, ASSISTANT PROFESSOR OF POMOLOGY, UNIVERSITY FARM, DAVIS, CAL.

WHY honey bees are "the orchardist's best friends," as asserted by Mr. Tufts, and what they mean to the fruit industry of California, is explained in a most interesting banner in an interview with the great bee expert, E. R. Root, on page 46 of this issue.

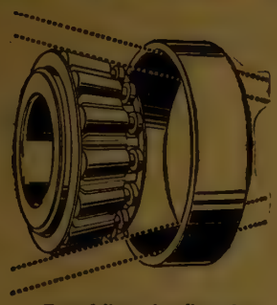
At present prices honey-production as a side line offers interesting possibilities to the orchardist. The busy little workers will therefore make money for him in two ways and deserve his serious consideration.

ABOVE, branch of a Nonpareil almond which produced no fruit without pollination; all varieties of almonds so far tested are "self-barren."

Lower left: Branch of an IXL almond, crossed with the Nonpareil. The negative results were due to the fact that these two varieties are "inter-barren."

Lower right: This heavy yield was secured by crossing the Ne Plus Ultra with the Nonpareil. The Ne Plus Ultra is also "inter-fruitful" with the IXL.

TIMKEN TAPER



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The Timken Taper *principle* has been tested out over hundreds of thousands of miles—on all sorts of roads—in nearly every make of passenger car on the market. It has been further proved by tests that only the heaviest trucks could impose.

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More and more tractor builders are realizing that this similarity of service exists, and there's proof of their acceptance of the tapered principle in the rapidly increasing number of Timken equipped tractors. There's more about the principle of Timken Taper in the booklet F-2, "Timken Bearings for Farm Tractors." Write for your copy.

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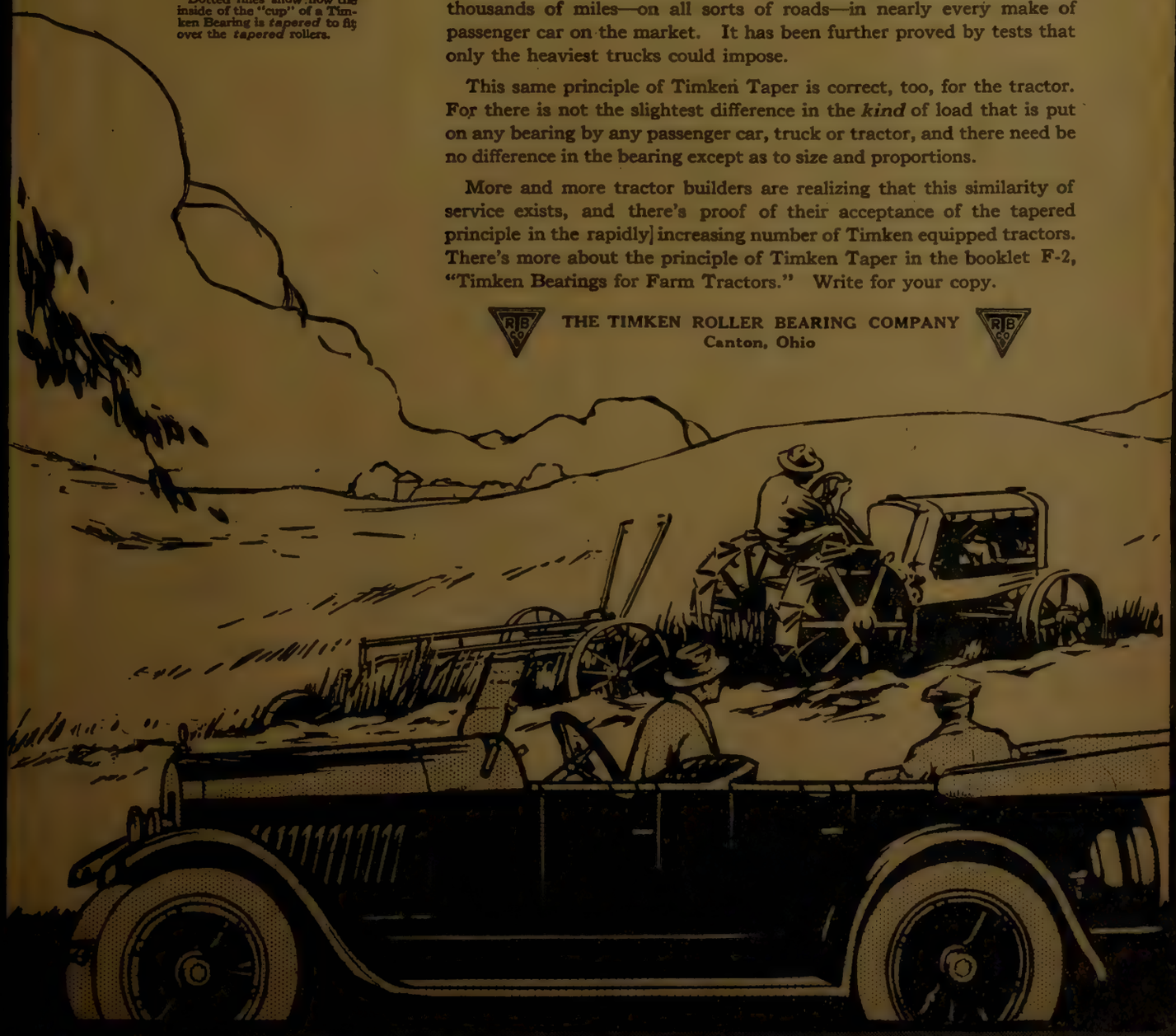

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The new Elcar is a treat for the eyes. Pretty as a picture. Graceful lines. Beautiful finish, put on the good old many coat way that *stays* beautiful. Everything in fittings and refinements *comes with the car.* It's a car you'll be proud of.

Yet the Elcar is even a better car than it looks to be. It has a wonderful motor that's powerful, speedy, flexible, easily handled. Driving is a real pleasure.

Dependable service is sure in the Elcar. It's made 150% strong in every part. We previously built cars in the $3,000 class. It has been a wonderful schooling toward putting real quality into cars selling at less than half that much.

It doesn't cost much to run an Elcar. An average of 18 to 20 miles is secured to a gallon of gasoline. 1000 miles are averaged to a gallon of oil. Tires give long mileage due to light weight and good balance.

5-Pass. Touring Car, 4-cyl. engine	$1175
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Write for catalog illustrating and describing the eight 1919 Elcar Models. We gladly mail it to anyone interested FREE upon request.

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The *"Burbank" Tomato,* is the *earliest tomato* in the *whole world.* The home tomato, the great packers' tomato. Half the tomato crop of the United States and Canada is secured by the grower, the other half by Fall frosts. You all know the "Burbank" wonderful rainbow corn, the finest foliage plant that grows out of doors.

The New Rainbow Chard Beet has also all the *rainbow colors* in its foliage; this is offered *first* in January, 1919. Many other new flowers, vegetables, grains, nuts and fruits.

Shall we add *your* name to our list. Send a postcard *now.*

LUTHER BURBANK

Santa Rosa California, U. S. A.

Why and How of Duck-Raising

DUCKS can be raised with success and at a profit on general farms or by town poultry keepers, but do not appear to be as well adapted as a source of income to average farm conditions as chickens. They serve, however, to add variety in both meat and eggs for the table. The demands for ducks' eggs are more limited than for hens' eggs and the demand for table duck at good prices is, to a great extent, confined to the large cities, and is not nearly as general as the demand for chickens. For this reason poultry specialists advise that prospective duck raisers study the market conditions before making a large investment in ducks.

Intensive duck farming on a large scale has been more successful than intensive chicken raising. The Pekin ducks, which are kept extensively by commercial growers, are less subject to disease than chickens, and artificial methods of hatching and rearing have been used very successfully with them. These facts, together with the observance of care in feeding and careful study of market conditions, have been responsible for the success of many commercial duck raisers. General farmers have rarely given to these latter points the attention necessary to secure a large share of the trade in fancy "green" ducks.

Growing Green Ducks

A green duck is a duckling which has grown rapidly and is marketed when from 8 to 12 weeks old, weighing at that time from 4½ to 6 pounds. This rapid growth is made possible by an abundance of care and good feeding. The highest prices for ducks are usually paid early in the spring, but the demand is chiefly from the large cities. As a matter of fact, many farmers market their ducks in the fall at a lower price than green ducks bring in the spring.

The Pekin breed is kept almost exclusively by producers of green ducks. Ducks of this breed are hardy, make fairly good layers and are practically nonsetters. The standard weights of adult drake and duck are 9 and 8 pounds each, respectively. They are easily confined by low fences, and are a good breed to raise as a side issue on a general farm or by the town poultry keeper.

Feeding Ducklings

Ducks may be fed on the rations recommended for chickens, but better results are usually secured by feeding more green and vegetable feeds and a larger proportion of mash. Ducklings do not need feed until they are from 24 to 36 hours old. After this they should be fed for the first week five times a day; after that, four times a day until they are two or three weeks old, and thereafter three times daily until they are marketed. The first ration should consist of a mixture which contains equal parts by measure of rolled oats and bread crumbs, with 3 per cent of sharp sand mixed in the feed. When the ducklings are about three days old, this feed is changed to equal parts of bread, rolled oats, bran and corn meal. After the first week the ration should be changed again to three parts of bran, one part each of low grade wheat flour and corn meal, 10 per cent of green feed, and 5 per cent of beef scrap, with about 3 per cent of sand or grit. The amount of beef scrap is gradually increased until it reaches 15 per cent by the end of the third week. The proportion of corn meal is increased for the ducklings to be marketed and the bran decreased as the time for marketing the ducklings approaches.

Finishing for Market

The fattening ration, which should be used for two weeks before killing, consists of 3 parts, by weight, of corn meal, 2 parts of low grade flour or middlings, 1 part of bran, ½ part of beef scrap, 10 per cent green feed, and 3 per cent grit. This mash is fed three times daily. The green feed is sometimes left out of the ration during the last week of fattening, as it tends to color the meat, but it is easier to keep the ducklings in good feeding condition if it is included. Boiled fish is sometimes used in place of the beef scrap, but this should be discontinued two weeks before the ducklings are killed, in order not to impart a fishy taste. Where milk is available at a sufficiently low price, the rations recommended for milk-fattened chickens would produce a well-bleached milk-fed green duck. Celery seed is also used, as this is said to flavor the flesh.

STANDARD BREEDS OF DUCKS

There are 11 standard breeds of ducks which have been admitted to the American Standard of Perfection. These may be divided into three classes: (1) the meat class, including the Pekin, Aylesbury, Muscovy, Rouen, Cayuga, Buff and Swedish; (2) the egg class, which includes the Indian Runner; and (3) the ornamental class, composed of the Call, the Crested White, and the Black East India. The common or so-called "puddle" duck is kept on many farms in the Middle West and South and is generally of small size, a poor layer, and an undesirable type of market duck. Excepting the Muscovy, all of our economic breeds of ducks are said to have originated from the Mallard, or common wild duck.

Indian Runners, the Egg Breed

For the general farmer who is more interested in obtaining eggs than in producing green ducks for the market, the Indian Runner is a good breed. This duck holds the same relative position in the duck family that the Leghorn does in the chicken family. It lays a good-sized white egg, considerably larger than a hen's egg, and is declared to be a small eater, a good forager, and hardy.

At the present time the keeping of ducks for eggs is an industry which appears to be growing more rapidly in the south than elsewhere. A good demand for these eggs exists at Easter time, when the prices are usually several cents a dozen higher than for hens' eggs, but during the balance of the year the average price for the two has been about the same. Recently, however, the introduction of the Indian Runner has helped in building up a trade in first-class ducks' eggs. These eggs should be marketed frequently, as they depreciate in quality more rapidly than

(Continued on Next Page)

Duck Raising Pointers

(Continued from Page 20)

hens' eggs. The possibilities of securing a market, moreover, should be carefully investigated, for it is only in certain places that good prices can be secured for fancy ducks' eggs.

Hatching Pointers

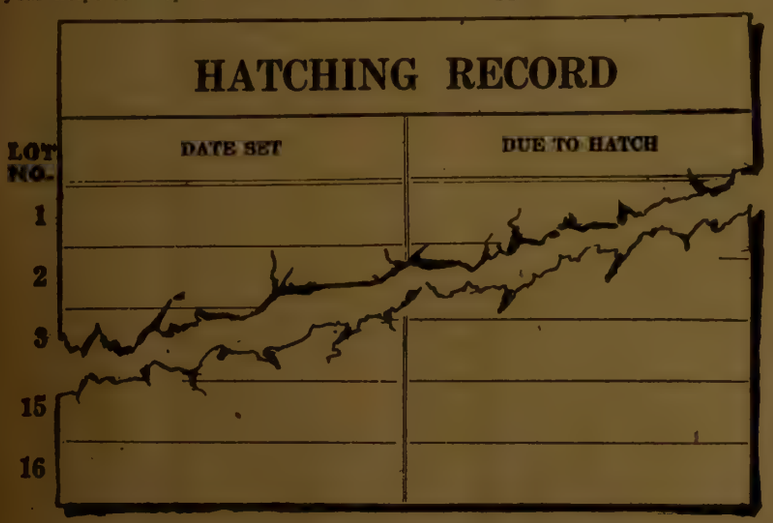
On commercial duck farms most of the hatching is done in incubators, for the Pekin and Indian Runner rarely sit. On farms where no incubator is available, the eggs are usually hatched under hens. The period of incubation is a week longer than that of hens' eggs, and, for this reason, the hen must be well cared for. While ducks are easier to brood artificially than chickens, they may also be raised successfully under hens. In the latter case it is better to confine the hens and to allow the ducklings free range. Birds that are intended for sale as green ducks, however, are not usually allowed much range, but are fed heavily and forced for rapid growth. The brooders and brooding systems used for chickens give good results in rearing ducklings, although the latter do not require as high a temperature.

Whitewashing the interior of the house thoroughly once or twice a year helps to keep it sweet and clean.

Eggs With White Yolks

One of the features of the University of Missouri College of Agriculture exhibit at the St. Louis Poultry Show was a number of eggs with white yolks. These were produced in experiments conducted to determine the effects of different colored feeds in producing the yellow color in plumage, and shanks of birds, and the deep color in yolks of eggs. It has been found that the yellow pigment which gives the color to the shanks of birds and which makes yellow yolks and causes creaminess in white plumage, is a substance known as xanthophyll. This is the principal pigment of yellow corn and is also found in green food and most other feed stuffs. By feeding a produce free from xanthophyll, the experimenters have been able to produce Leghorn pullets and cockerels with perfectly white shanks, beaks, earlobes and plumage. These pullets, fed on the white ration, lay eggs without any color in the yolks.

After seeing this exhibit, poultry fanciers will realize the importance of reducing the amount of pigments in the rations fed to white birds intended for the show while egg producers will see the advantage of feeding yellow corn and other feeds rich in color to laying hens to produce the deep colored yolks desired in market eggs.



Do You Know When the Shells Will Break?

It pays to keep a record of each lot of eggs. A hatching record form, such as the one illustrated above is easily made and of great value to the poultryman, who can lay his plans accordingly and thus give each lot of chicks the care and feeding necessary for their proper development. It is but a moment's work to jot down the figures which make the difference between accurate knowledge and guesswork.

Doubling Egg Yield

A ration which was successfully used in official experiments to obtain maximum egg production, was found in several communities actually to double the production of laying hens to which it was fed during the winter. The following quantities are sufficient to feed 100 hens one day:

Scratch Feed

Shelled corn or Egyptian corn	10 pounds
Oats or hulled barley	5 pounds

Feed in deep litter morning and evening.

Dry Mash

Bran or cornmeal	3 pounds
Shorts or ground oats	3 pounds
Beefscrap	1½ pounds
Tankage (may be used in place of beefscrap)	1 pound

Use either the beefscrap or the tankage, or if neither is available, use three gallons of milk. This mash should be kept before the birds at all times. In addition, give plenty of green stuff, fresh water, grit and shell.

Waste bread, crackers or cakes, ground to a powder, make an excellent addition to the mash.

Raising Baby Chicks

Having had such good luck with raising young chicks, I want to contribute my method for the good of other poultry raisers. The recipe for a rabbit stew, I believe, is first to catch your rabbit. In raising chicks, it is not first get your chicks, but first buy a cow. Sour lobber milk is what makes a 100 per cent raising. Use oat flakes the first few days, dampened with sour milk; after that, bran, and after three weeks, whole wheat or cracked corn.

I use hens for hatching and am perfectly satisfied with "Nature's method." But first get a cow—or, better, two.—Elbert Wakeman.

In response to continued inquiries concerning the operation of the rule which prohibited the sale of laying hens or pullets during the spring of 1918, the Food Administration reiterates that this rule will not be operative during the egg-laying season of 1919.

Your Tractor Question

"Will It Do MY KIND OF WORK?"

Answered in Tractor Book

THIS Tractor Book tells all about *special abilities* of Bean TrackPULL Tractor in *orchards* and *vineyards*.

This great little 6-H.P. machine, designed by builders of special orchard and vineyard machinery for 34 years, combines a wealth of experience in one most efficient design to meet definite orchard and vineyard needs:

Don't buy tractor built for *general* use which may prove merely an expense, no matter what the purchase price.

Tractor designed to *do your kind of work* is the cheapest by far in *service-costs* per year.

Bean TrackPULL turns about-face in 10-foot circle with *full* power—tools deep in soil. You turn right back in same row.

Built low to go under lowest branches. Great traction permits

light weight, low fuel expense, and best work in soft soil.

Bean TrackPULL Tractor will be as famous as noted Bean Power Sprayer when as many are in use.

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New "After-the-War" Proposition

We have a new "After-the-War" proposition which includes a bond covering a liberal guarantee on one season's work of 90 days, without expense for repair parts. This guarantee bond is furnished each purchaser of a BEAN. A reduction in price is also effective at once, and guaranteed up until June 30, 1919.

Also manufacturers of famous Bean Power Sprayers

See this Tractor at either of our Branch Houses 131 N. Los Angeles Street Los Angeles, Cal., or Fresno, Cal.

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Send me TrackPULL catalog and full information without obligation on my part.

Name _____
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Made of CORRUGATED sheet metal—several hundred per cent stronger than smooth metal.

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Made of genuine Open Hearth Iron or Kentucky Copper-bearing Metal.

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Lock-seamed under tremendous pressure. Built heavy and strong.

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We make all types of well casing for water wells—casing that fits smoothly and evenly.

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With the enlarged facilities afforded by our recently completed factory in Oakland, we are now perfectly equipped to take care of the rapidly growing demand for Madewell Sheet Metal Products.

Madewell Surface Pipe (formerly made in Gilroy) is already well known throughout the irrigating sections of the State as the best of its kind, and the entire Madewell line is built to the same high standard of quality and permanence.

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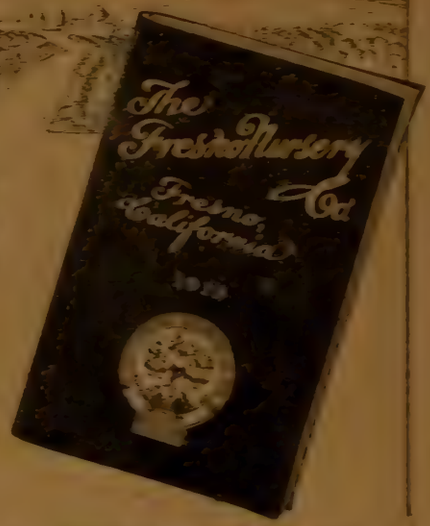

An Orchard Is a Good Investment

Write today for this

TREE Catalog

and learn how to plant and grow trees successfully

THIS BOOK answers in a satisfactory manner many questions which you may want to know, for instance, if you are going to plant plums, what kind?

Early varieties of peaches bring good returns, but an assortment of peaches ripening from May to November is in many cases preferable.

While the Tilton Apricot is the canners' favorite, there are others equally good. Some trees grow and bear best in the warm interior valleys, while others do better at a higher altitude along the foothills.

Growing almonds has become very profitable. Do you know whether your locality is suitable to almond culture?

If you are in doubt as to what trees would do best on your land, write to us, describing as fully as possible all of the conditions, and we will be glad to advise you.

Send for Our Illustrated Catalogue and Price List. Contains 104 pages of real valuable information for fruit growers.—Free on request.

The Fresno Nursery Co.

P. O. Box 615-F **Fresno, Calif.**

If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

How to Control Pear Thrips

Written Especially for Orchard & Farm
By Harry S. Smith
State Entomology, Sacramento

PEAR thrips will probably present a serious problem this year, and it is well to be forewarned. During the season of 1918 this pest was more numerous than it has been for several years and the early and heavy fall rains were favorable to its successful hibernation. This being the case, we are justified in expecting the thrips to "carry over" in large numbers during the winter and to be present in our orchards in abundance this spring. This warning is not given as a prophecy but for the purpose of calling attention to what we may logically expect from the combination of early fall rains and the probable presence of large numbers of thrips in "winter quarters." Prune and pear growers should by all means be in readiness to carry out the spraying campaign necessary to combat the pest.

Habits of the Pest

The pear thrips, which attack not only pears but stone fruits as well, spend the winter in the ground, several inches beneath the surface. Early in the spring, usually about the middle of February, the pests begin to leave the ground and appear on the trees, and by the middle of April these adults have practically all left their winter quarters. As soon as the buds begin to swell they commence to feed. Late in February and in March they lay eggs in the fruit stems, young fruit and leaf stems. During the latter half of March the eggs begin to hatch, producing the larvae or "white thrips." These develop by feeding upon the plant tissues until they are full grown, about the last of April, when they drop to the ground and bore into the soil to remain until the following spring.

The damage done by this pest is caused by its feeding upon the buds and early blossoms, and by the deposition of eggs in the stems. Frequently the injury prevents the tree from blossoming, or the blossom from setting fruit, or causes a scarring of the fruit which reduces its grade. An enormous amount of damage may be done to a prospective fruit crop when these insects are abundant and not combated.

Plan of Campaign

The thrips can be controlled by a thorough spraying campaign, but the work must be done very thoroughly and at exactly the correct time. The fruit buds should be closely watched and spraying operations should commence as soon as the thrips appear in numbers and before the buds have been seriously injured. The Federal Department of Agriculture recommends three sprayings, as follows:

The first spraying as soon as the thrips can be found on the trees in numbers (generally very early in March).

The second spraying, 4 to 10 days after the first, on pears, just as the earliest cluster buds are spreading; on prunes and cherries, when the tips of the petals first begin to show.

The third spraying, when abundant numbers of the small, white, active larvae can be seen.

Materials to Use

The liquid must be applied with a nozzle which will give a coarse, driving spray, capable of penetrating between the scales of the buds.

The spray formula which has given the best results, known as the "Government formula," is made up of a 3 per cent distillate oil emulsion to which has been added nicotine sulphate or "Black Leaf 40" at the rate of 1 part to from 500-2000 parts of the emulsion. If the grower does not wish to make his own spray mixture he may purchase it from a dealer. But if spraying for thrips is new to him, he should make sure, by consulting his county horticultural commissioner, that he is getting a reliable brand.

The secret of success in fighting thrips lies in the use of good materials, applied at the right time, in the correct manner. The period for the first spraying is extremely short, and delay means poor results. It is therefore particularly important that everything should be in readiness beforehand.

Walnut Worm Control by a New Method

In a recent issue of Orchard and Farm appeared an article dealing with walnut-worm infestation and the sterilization of sacks as a means of control.

D. B. Mackie, field deputy of the State Commission of Horticulture, has apparently solved one of the most perplexing questions relating to codling moth elimination in bags used to ship walnuts.

He suggests the employment of an electrically heated laundry mangle. The empty bags in passing through the machine are not only subject to great pressure, but also are sufficiently heated to kill any living matter contained therein.

Mr. C. Thorpe of the California Walnut Growers' Association writes Commissioner Hecke that the mangle machine has a decided advantage over other methods tried, as it turns out the bags in improved condition, whereas all other forms of treatment have left the sacks damaged and wet and consequently subject to mould.

The cost of mangle treatment is estimated to be about one-half cent a bag.

It is suggested that every walnut packinghouse be required to install one of these mangles, since the adoption of this method would prevent the spread of the worm from district to district, which is now possible through the medium of infested bags.

A mangle has recently been installed in Los Angeles county, where a large number of sacks have been treated.

An Old Cherimoya

This sturdy tree at Santa Barbara makes a notable record.

THE performance of an old cherimoya tree in the yard of George Kimberley at Santa Barbara has during the past season given stimulus to other plantings, and the development of a new industry for this section may be the result.

The tree in question, planted 30 years ago, is unidentified as to variety, although when planted was supposed to be of the ordinary Mexican type. During the present season it ripened in excess of 200 perfect fruits, the largest of which weighed three pounds and five ounces. This one was sold

A Typical Fruit

Of the cherimoya, which, although cultivated in California for many years, has only recently promised to attain commercial importance.

for 60 cents. Dozens of them, but little smaller, found ready sale at 50 cents each. All contained sweet tender, delicious pulp. The seeds were small; skin, tough and greenish, with a hint of purplish red; spines, sharply defined but with blunt, rounded ends.

This tree, throughout the years of its growth, has received no pruning nor irrigation. The fruit began to ripen early in November and the old tree continued to furnish fruit to the new year when its leaves were rapidly dropping. It is only semi-deciduous, for no sooner do the old leaves drop than the new ones begin to form. Thus the trunk is bare for only a short time. The tree has attained a height of about 25 feet and is sturdy, the wood being so tough that even though the fruit is borne only on tiny branches, they do not break.—C. B. Irvine.

The Musical Dairy

Jones put his record-breaking cow
Upon official test,
And played sweet airs to soothe her brow
And make her do her best.

Artistic temperament will out;
One day she had a spell,
And broke not only records, but
The phonograph as well.

How big is a leak?

THERE'S ONE THING SURE ABOUT A LEAK—IT NEVER GETS SMALLER. It leaks more—never less.

One big milling concern in California has found that it has to resack about 15% of grain shipped to it in sacks—because of bad leaks.

On shipments of 100 tons of sacked grain, at this rate, a leak is 15 tons big.

In your own fields the leaks in sacks costs more than you think. Every rat—a leak maker—costs you $1.50 a year. Rain causes leaks in sacks. Weak sacks—many are *weak*—leak quickly. Bad sewing causes leaks.

Stop Losing Grain with Leaky Sacks

Handle your grain in bulk. Calco Metal Grain Bins do not leak—they save costs of sacks, rat-feed, loss by rain, stop the thief and keep away the fire.

Calco Grain Bins cost just once—when you buy. They pay for themselves quickly and then—cost nothing.

Mills and railroads prefer to handle grain in bulk. They are equipped for it now. It costs less—saves more.

Write for the booklet "Calco Grain Bins." Read about the comparative costs of handling grain in sacks and in bulk. The booklet is free—write for it NOW.

California Corrugated Culvert Company

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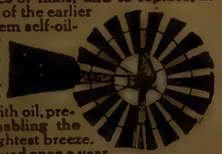
CALCO Metal Grain Bin

THE SELF-OILING WINDMILL

has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load.



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Delay Buying Until You Have Compared My Samples With Seed Others Offer.

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Multiplexing the Telephone

Marvel has followed marvel since Alexander Graham Bell invented his first simple telephone, the forerunner of the millions in use today.

In these last four decades thousands of Bell engineers have developed a system of telephonic communication, so highly perfected that the same crude instrument which at the beginning could hardly carry speech from one room to another can now actually be heard across the continent. This is because of the many inventions and discoveries which have been applied to intervening switchboard, circuits and other transmitting mechanism.

The vision of the engineers has foreseen requirements for increased communication, and step by step the structure of the art has been advanced—each advance utilizing all previous accomplishments.

No one step in advance, since the original invention, is of greater importance, perhaps, than that which has provided the multiplex system, by which five telephone conversations are carried on today simultaneously over one toll line circuit, or by which forty telegraphic messages can be sent over the one pair of wires. As in a composite photograph the pictures are combined, so the several voice waves mingle on the circuit to be again separated for their various destinations.

By this wonderful development the Bell System obtains for the public a multiplied usefulness from its long distance plant and can more speedily and completely meet the needs of a nation of telephone users.

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AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Try This One-Man Stump Puller 30 Days FREE

SEND NO MONEY!

SYSTEM
in shop office and field

The Irrigation Reservoir

THE rancher who has loose, sandy soil need no longer assume his inability to make a satisfactory reservoir. It is quite possible, without using cement, to make a leak-proof storage tank, capable of holding a large supply of water. This is done by coating the interior of the depression with a mixture of asphalt and sand, and finishing the surface with a specially prepared material containing oil and asphalt. The principal manufacturers of petroleum products now furnish experts who, upon inspection, will recommend the material best suited for water-proofing.

Such a reservoir, capable of irrigating fifteen acres, and of being filled in forty-eight hours, is in regular use on a desert ranch, where it was formerly thought impossible even to use open ditches, much less to store the water.

It is considered a great labor saver, for by the use of the reservoir with concrete mains and laterals, the man labor in irrigating an orchard has been reduced from eighty hours to fifteen. The irrigator can use simultaneously water from the reservoir and part of the water direct from the pump, the balance going into the reservoir.

The Milking Machine

IS THE milking machine a success? Speaking generally, and considering the question in a broad light, it can be answered unqualifiedly, "Yes." Hundreds of dairymen can be found who are enthusiastic advocates of machine milking. Numerous objections to the employment of machines naturally arose when they were first generally marketed but it is only fair to the manufacturers to state that the earlier difficulties have been to a large extent overcome.

Frequently the dairyman who installs a machine is not content with the actual saving in labor and expense that it brings about, but expects almost impossible things of it, merely because it is mechanical. Most of the "grief" accompanying the installation of milking units may be traced to an indisposition on the part of the owners to recognize the necessity for care and cleanliness in their operation. The milking machine, as now made, is neither "fool-proof" nor unbreakable. It requires intelligent care and close attention to the operating instructions furnished by the manufacturer. There are, however, a number of makes on the market which will do all that is claimed for them and sometimes more, provided they are properly installed.

A Million Gallon Reservoir in Sandy Soil

When first constructed, this storage tank "leaked like a sieve." It now holds water as well as thought it had been lined with cement. The accompanying explanation tells how it was done.

"Grousers" on a Tractor

The use of extension wheels on a small four-wheel tractor which slipped in sandy soil and "buried itself" under a heavy load, failed to solve the difficulty as well as the employment of seven-inch "grousers" with the regular wheels in place of the regular three-inch cleats. The wider wheels were found to be essential, however, in wet, muddy soil.

Working Small Horse

Noticing some time since in Orchard and Farm an explanation of the proper hitch of a team to a plow, I thought I might add to it the statement that when plowing with a team where one horse has slightly longer legs than the other, it will place the pull from the two sets of tugs at approximately the same height if the horse with the longer legs is worked in the furrow.—Tulare Farmer.

The important question, of course, is whether or not the resulting saving in labor will justify the expense of first installation. The best way for the farmer to satisfy himself on this point is to enter into a debate with the dealer. Make the dealer prove that the machine will save money, and if he does so, do yourself the justice of giving it a trial, first, however, convincing yourself that it will do the work in your dairy without injury to your cows. Some manufacturers claim that machines may be economically used for less than 12 cows.

There is a movement on foot among the dealers to inaugurate local demonstrations, such as are frequently given by tractor dealers. It seems to us that this would offer the best opportunity not only for the dealer to make sales but for the farmer to gain an understanding of the different types of machines. Undoubtedly we are entering upon a period of expansion in the dairy industry, following the hard times existing during the past few years. This situation is certain to stimulate interest in milking machines.

A Dairy Hint

A DIFFERENCE of from a pint to a quart of milk a day, besides a great deal of convenience in milking, seems to have been secured by using a little vaseline or kitchen fat on the teats of the writer's family cow.

Used first for sores, it protected the sore spots from friction and rubbing and gave them a chance to heal. It also made the teats soft and the milking much more pleasant for the cow as well as the milker. Later I used the vaseline occasionally when the teats were rought and chapped, but finally changed to kitchen fat, which seemed to be a big improvement. Having secured such good results, I have made a practice of putting on a very little of the grease perhaps once in three or four milkings, or as often as it seems desirable. As a result, the teats are always kept soft, apparently comfortable to the cow and very nice to milk. The benefit in milk production is merely estimated, but seems to amount to approximately a pint or a pint and a half a day. Careful tests would be needed to prove this point. At any rate, this simple treatment is well worth trying.—Tulare Farmer.

Caring for a Tank

A Southern California rancher who irrigates with an engine using "tops," and who hauls his fuel in large quantities, built a frame for his galvanized tank, so that the tank and frame could be lifted off the running gear like a wagon-box or rack. He then provided rope slings, with block and tackle, on the rafters of his implement shed. The tank, when not in use, is lifted off of the trucks by one man, who then drives out from under it, leaving it securely suspended where it is protected and out of the way.

Beet Top Ensilage

An additional value of $35 an acre has resulted from ensiling sugar-beet tops in Ventura County, California. Formerly the tops were sold in the field to cattle and sheep owners at about $2 an acre. The new utilization means a great saving in feed. The farm bureau in Ventura County is carrying on a silo campaign, and plans have been laid for the construction of a number of beet silos this year.

Tractor Plow Extension

Many orchardists are using triangular extension clevises in order to plow closer to the trees than is possible with the ordinary equipment. By hitching the plow to one corner of the triangle and the tractor to another, the operator throws the plow eight or ten inches to one side, while the draft is increased little if any. It is best, however, before using special equipment to consult the dealer or manufacturer.

An Important Machine

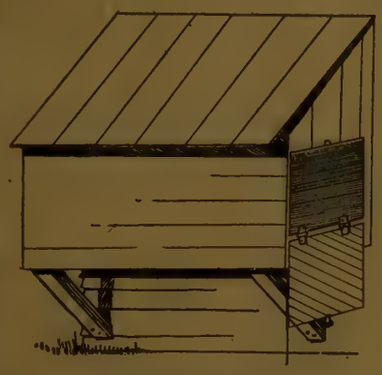
Have you a manure spreader? The modern spreader is one of the most efficient farm machines made. Straw spreading attachments may be had which do very good work. Even at present high prices a spreader is a mighty safe investment, for the labor and fertility saved as compared to hand spreading with forks will soon pay for the spreader if any quantity of material is handled.

Thrashing Handfuls

A farmer who raised for seed a very small quantity of high-priced wheat, clipped the heads from the stalks with shears and then thrashed them by beating the grain in a burlap sack. The fanning mill did the rest

A Better Wood-Box

RECENTLY my father built a small, inexpensive ranch house, which although of simple design contains many of the conveniences so dear to the neat housewife. The device that my mother likes best is the wood-box, which was built against the wall outside of the kitchen, where it can be filled without entering the house. It is built of the same material as the wall and has a good rainproof roof. Braced solidly against the house, it makes a neat appearance. An opening about two feet square, through which the box is filled, is at one end on the outside of the box. The wood is reached in the kitchen by means of a neat door, 24 inches square, which fits snugly into the interior wall and has a latch which holds it securely when closed.



Dimensions of Box

The wood-box is three feet wide and three and one-half feet long. It is four feet high next to the house, and two and a half feet at the outside edge. The inside door of the wood-box is about two feet from the side of the stove.

The box was built for about $2. Anyone who is handy with hammer and saw could add such a box to either a new or an old dwelling. The cost of the wood-box is very little when one considers the labor it saves, and the satisfaction to be derived from having the kitchen floor clean. Then again, no one is "tracking through" the kitchen with muddy feet, when carrying in wood. Another advantage is that the outside wood-box holds quite a large supply of fuel.—Helen R. C. Temple, Sacramento, Cal.

Transplanting Large Trees

A number of four-year-old apple trees, stunted because of their proximity to a wind-break, were successfully transplanted by a San Bernardino county grower to fill spaces in the rows where dead trees had been removed, thus doing away with the necessity of purchasing new and younger nursery stock.

A steel drum, like a barrel with both ends removed, and large enough to go over the entire tree, was used to hold the ball of dirt around the roots. The orchardist placed this drum on the ground over the tree and dug away the dirt around the outside, allowing the cylinder to settle down as he dug and forcing it when necessary, until its top was almost level with the surface of the ground. It was necessary to cut a few of the longer roots, but not many, as the drum was quite large in diameter. It was possible, after a board had been slipped under the bottom, to transport drum, dirt, tree and all to the selected location, where it was dropped in a prepared hole and the casing slipped off again. This method is particularly to be recommended for loose soil.

A Farm Becomes a Home When Drudgery Leaves

A farm becomes the ideal home when back-breaking tasks are eliminated. And tasks of this kind can be eliminated. Such chores as milking, churning, wood sawing, water-pumping and feed-cutting may be handled with little manual labor and in quicker time if they are done electrically.

G-E Farm Motors

are giving this kind of service economically and satisfactorily. You will find that the nearest Central Station or G-E Motor Agency has complete information on motor costs, sizes required and operating charges. You will find experienced men ready and willing to offer suggestions on the best motor installation for your own particular needs. The service is freely given.

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Look into the new, money-saving methods of clearing land, blasting tree beds, ditches, boulders, etc. They are all described in our up-to-the-minute book, "Better Farming with Giant Farm Powders." A post card will bring it by the first mail.

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GIANT
STUMPING FARM POWDERS EUREKA

A Cement House for "Everyman"

A FIVE-ROOM modern, monolithic concrete, fireproof house was built for less than $1800 by J. O. Turner of Victorville, San Bernardino county. So well suited is this home for the average ranch that we procured the accompanying photograph, feeling sure that many readers of Orchard and Farm would be interested.

The impression prevails generally that solid concrete construction, especially when used in a dwelling, calls for expert knowledge and workmanship. Not only has Mr. Turner proved the fallacy of this idea, but he has also shown that a cement bungalow may be as attractive as any brick, stone or frame house, with the added advantages of being durable, fireproof and heat and cold resisting. "Concrete for permanence," the slogan of the cement manufacturers, seems to be particularly applicable to this dwelling for it will certainly be standing and in good condition long after neighboring houses, which cost more to build, have deteriorated.

Interior Finish

The lumber used for the forms was not wasted, but was employed for subflooring and roofing. The solid concrete walls were finished inside with lath and plaster over 2x2 studs, and the partitions were built like those in ordinary frame construction. The interior appearance of the house is no different from that of ordinary frame and brick bungalows. Metal lath was used for the ceilings, adding to the fireproof qualities. Asbestos paper was placed between the diagonal flooring and the matched flooring, which increased the temperature resisting qualities of the house. It is said to be the coolest house in summer and the warmest in winter to be found in that community. Modern fixtures and high-grade wood work were used, and there are a number of built-in features.

The cement was procured near by and local sand and gravel, naturally mixed, were used; the availability of materials would be, of course, a determining factor in the use of concrete for any rural construction. In this case, however, the cement cost about 75 cents.

As to the method of construction Mr. Turner said: "It is necessary, of course, to reinforce the walls, especially at the corners. We used some small 'Tee rails' that we already had on hand, around the bottom of the walls and another line around the top, and bought half-inch twisted steel for the vertical reinforcing. I bought what angle iron, old wagon tires and other similar material was available, and used this 'junk' over windows and doors and at the corners.

"There is no reason why the pouring of the walls should not be done a little at a time, if care is taken to anchor the different sections by means of the reinforcing material and to tamp the work thoroughly. The forms for a house must, of course, be perfectly smooth, and constructed with unusual care. We used merchantable Oregon pine, 1x6, surfaced one side. We built the entire forms and then poured the concrete all the way around, keeping at about the same height as we went. It took about two days to pour the entire job. The walls were made six inches thick. The mixture was poured rather wet, and in the proportions of 1 to 6.

"As no power mixer was available, the material was turned by hand and taken to the tops of the forms with wheelbarrows, by means of plank runways."

Permanent Construction

The building is very solid and substantial, Mr. Turner points out. The rails were bolted together at top and bottom of the walls, thus making a solid line as an "anchor" all the way around. The plates under the rafters were securely anchored by means of long bolts, set in the concrete at the tops of the walls.

Questioned as to the method used to produce the smooth, white finish which makes the house so attractive, Mr. Turner stated that only a few rough places on the walls were chipped off. Then the entire outside was plastered with a mixture of white Medusa cement and the whitest, cleanest river sand available in his locality.

We trust that no earthquake or tornado, mild or severe, ever visits the Victor Valley, but if such a thing should occur, we feel sure that whatever happens to other buildings in that vicinity, the concrete house will remain standing.

Monolithic Concrete Construction

Makes this house not only durable, but heat and cold resisting to a remarkable degree. The floor is constructed in a manner which might well be emulated by other California home builders, since much of the chill and dampness so frequently encountered in cheaply constructed frame bungalows without basements, enters through the floors.

The Secret

Of success in agriculture, or in fact in any calling, may be boiled down to two things: The FORESIGHT to plan wisely and the INITIATIVE to execute promptly. The man who possesses these essential qualities will be found sooner or later, at the top.

Water
WHERE and WHEN you want it the year 'round. For house, barn, field, any place. BORE YOUR OWN WELL with our time-tested
Standard Well-Boring Outfit
Easily operated by hand. Bores wells 8 to 16 in. dia., up to 100 ft. deep. One man bored 48-ft. well in 5 hours. Another bored 5 wells averaging 75 ft. each and wrote "its a humdinger."

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STURGES & BURN MFG. CO.
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A Chat With You

"DON'T devote one-half of the paper to telling how good the other half is," is a good rule for any publisher to follow.

We believe that Orchard and Farm speaks for itself, but we cannot refrain from stealing just a little space, not to tell you what WE think about Orchard and Farm, but what our READERS think. While we cannot begin to publish all the approving letters that come to the editor's desk, many of them hold inspiration not only for us, but for other subscribers.

EIGHTY YEARS YOUNG

One of the most interesting communications we have received this month is from Major Charles Christensen of San Rafael, who won his title by distinguished Civil War service, and who describes himself as "80 years young and still interested in growing things." No doubt it is just this interest which has made the Major young at 80 and a regular reader of Orchard and Farm.

THE LETTER BASKET

Many are the short comments gleaned from the letters of new and old subscribers that show how well thought of is Orchard and Farm among its thousands of readers.

W. F. Moore of Dorris, California, says: "A friend gave me one of your papers to read; I like it; enclosed find check for three years' subscription." Again and again the friends of Orchard and Farm make new friends for it in just this manner. We like to have our readers save each copy, but in case you are not keeping a file, do not destroy your copy. Pass it on to some friend or acquaintance who may be interested.

"I take other farm papers, but am more than pleased with yours, as it is most helpful to me," writes John Hunt of Oro Lomo. And J. T. May of Sacramento concludes a recent letter with these words: "I consider Orchard and Farm the best farm paper I have read." Chas. Neuman of Fellows, Cal., expresses simply and accurately the feeling of many members of the Orchard and Farm family: "I like your paper; I like it very much." And our friends are not all among the men! Orchard and Farm is liked by thousands of farm women. Here is an extract from a letter received from Mrs. Arthur King, Perris, Cal.: "For the money, Orchard and Farm is a very wonderful paper. I am interested in chickens and fruit trees."

"Orchard and Farm is hard to beat," is the way S. F. Dorris of Chino expresses it, while Mrs. D. A. Strang of Ajo, Arizona, states that she considers Orchard and Farm an "A Number One paper."

"I do not know what I could suggest to improve Orchard and Farm," writes Fred U. Swift of Kirkwood, Cal. "I enjoy reading it and get more good out of it than any other farm paper that I take. Just keep it as good as it is and it will be O. K."

Letters like these make us feel that our efforts are appreciated. We wish we had space to print them all.

—The Editor.

Tractor Use, Profit, and Safety

TRUE progress is always slow. The change to mechanical power for farm work has been twelve years in the making, but today there are few American farmers who have not given serious thought to the question of tractorizing their farms.

For the benefit of those who may not yet be convinced that the tractor is a useful, profitable farm power machine, we present again a few of the opinions of farmers who are using the International Kerosene Tractor. Some of these are about essential features, and some mention only conveniences, but taking them altogether, almost any farmer will feel, after reading them, that the International 8-16 is a tractor worth considering.

"My International supplies a power flexible enough to handle the large amount of seedbed, harvest and other work without delay."

"It can be used for continuous work if emergency demands it."

"It produces power at much lower cost than horses, and it can be used for both drawbar and belt work."

"I like the steady way it works. Without seeming to hurry, it gets through a surprising amount of hard work."

"It does a lot of good work at a cost so low I could hardly believe it. You did a wonderful thing for Eastern farmers when you made this tractor to run on kerosene."

"It is not bothered by flies, nor by bumble bees. It works steadily on the hottest days."

"Requires very little care. When the day's work is done, I run the tractor tail first into an inexpensive shed. In the morning, I fill the fuel tank and the oiler, look into the radiator, and am ready for another day's work."

These opinions are typical. They prove at least that the International 8-16 is a useful, profitable tractor. Now consider just one other thought for a minute.

This tractor is the outgrowth of twelve years of active tractor experience by a company that has sold all kinds of farm machines for many years. The beginning of this business goes back to 1831—almost 88 years ago. Does it not seem reasonable that with this experience we should offer you a tractor that you could use with profit, especially when we expect to come back some day and sell you more of the machines listed in this advertisement?

If you are now convinced that the International 8-16 is a useful, profitable tractor on some farms, and that you don't have to be an expert to buy one safely, write us to find out what this tractor will do for you, on your farm. A post card will bring you full information.

The Full Line of International Harvester Quality Machines

Grain Harvesting Machines
Binders, Push Binders, Headers, Rice Binders, Harvester-Threshers, Reapers, Shockers, Threshers

Tillage Implements
Disk Harrows, Cultivators, Tractor Harrows, Spring-Tooth Harrows, Peg-Tooth Harrows, Orchard Harrows

Planting & Seeding Machines
Corn Planters, Corn Drills, Grain Drills, Broadcast Seeders, Alfalfa & Grass Seed Drills, Fertilizer & Lime Sowers

Haying Machines
Mowers, Tedders, Side Delivery Rakes, Loaders (All Types), Rakes, Combination Side Rakes and Tedders, Sweep Rakes, Stackers, Combination Sweep Rakes and Stackers, Baling Presses, Bunchers

Belt Machines
Ensilage Cutters, Huskers and Shredders, Corn Shellers, Threshers, Hay Presses, Stone Burr Mills

Belt Machines—Cont.
Cream Separators, Feed Grinders

Power Machines
Kerosene Engines, Gasoline Engines, Kerosene Tractors, Motor Trucks, Motor Cultivators

Corn Machines
Planters, Drills, Cultivators, Motor Cultivators, Binders, Pickers, Ensilage Cutters, Shellers, Huskers and Shredders

Dairy Equipment
Cream Separators (Hand), Cream Separators (Belted), Kerosene Engines, Gasoline Engines, Motor Trucks

Other Farm Equipment
Manure Spreaders, Straw Spreading Attach., Farm Wagons, Farm Trucks, Stalk Cutters, Knife Grinders, Tractor Hitches, Binder Twine

International Harvester Company of America
(Incorporated)
Billings, Mont. Crawford, Neb. Denver, Colo. Helena, Mont. Los Angeles, Cal. Portland, Ore. Salt Lake City, Utah San Francisco, Cal. Spokane, Wash.

Calf Enemies

WHITE SCOURS BLACKLEG

Your Veterinarian can stamp them out with **Cutter's** Anti-Calf Scour Serum and **Cutter's Germ Free** Blackleg Filtrate and Aggressin, or **Cutter's** Blackleg Pills.

Ask him about them. If he hasn't our literature, write to us for information on these products.

The Cutter Laboratory
Berkeley, Cal., or Chicago, Ill.
"The Laboratory That Knows How"

"My WADE Saws Four Cords an Hour!"

"The Wade is certainly the farmer's friend. I have cut 1600 cords of yellow fir wood with it, and it's as good as the day I bought it."—Dan Ross, Corbett, Oregon.

Why break your back sawing wood by hand, when the powerful little Wade Portable Gasoline Drag Saw will *outsaw 10 men at one-tenth the cost!* Light, simple, economical. Cuts wood of any size. Averages 8 cords to a gallon of gasoline. Thousands of Wades now in use. When not sawing wood, the 4 h. p. engine will operate other light machinery.

Wade Portable Gasoline Drag Saw

Prompt delivery on WADES from over 100 Shipping Points throughout the U. S. and Canada.

FREE!
Big illustrated Catalog of the Wade—also story of "How Dan Ross cuts 40 cords a day."
Write today

HELPFUL HINTS for THE HOUSEWIFE

Edited by *Isabel Sinclair*

The Home is the Hub of the Universe

OCCASIONALLY I meet a woman who has a tremendous capacity for work, successfully manages a big household and brings up a large family of children, finds time to sew, read and attend meetings, and to enjoy some social life, at the same time keeping her buoyant spirits and her youthful bloom. Usually this woman has a large number of friends and is a leader in her community. I envy and admire her type. The explanation of her attainments is simple and usually the same in every case—boundless good health and strength.

One meets with many suggestions for living a broader and more happy life, all designed to make possible just such attainments as those accomplished by the healthy woman as a matter of course. We are told to systematize our work; not to worry; to rest every afternoon; to massage the face; to exercise morning and evening. One school of faddists advises eating certain foods and one advises not eating atall. If the farm woman were to attempt to follow all this advice, she would have no time to sleep, for her ordinary work would occupy half of the twenty-four hours and her efforts to keep young and well the other half.

But this does not mean that nothing can be done along such lines. Brainy management of the household and the determination not to become a drudge will do much to broaden and strengthen the life of the rural housewife, but the fact remains that nothing can or will take the place of health and strength.. For she who knows nothing of nagging physical distress or fatigue is relieved of a handicap which 95 per cent of the women of today must bear.

The Part of Wisdom

And this brings me down to my point. In thousands of the homes visited by Orchard and Farm, young girls are growing up. You Mothers who received the "old fashioned bringing-up" and are now enduring the effects of it, can do much to spare your daughters the handicap that you have borne. Above all else, do not let them become "house-flowers." Encourage all kinds of reasonable athletics; let them swim and ride and play tennis and romp and run in the open air; encourage athletics for even the little girls at school, first making sure, however, that each girl of any age will be allowed to take part only in relation to her physical capacity as determined by medical examination. Insist on sensible clothing at least until graduation from high school. Keep in mind all the time, first and foremost, physical upbuilding. This involves also, of course, mental and moral training, for health is as much dependent upon them as upon exercise and care of the body. Parental frankness and companionship, exercise in the open air; the advice of a competent physician; constant activity along well directed lines—these are some of the things which will make life's path easier for the coming generation of women. Much progress has been made along these lines during the past decade, but still too much emphasis cannot be placed upon the all-important subject of health.

And not the least important step is thoroughly to impress upon the mind of the growing girl the blessings that come with a strong body and the handicaps which go with weakness due to improper development or carelessness at the crucial time when she is budding into womanhood. Sometimes this argument is sufficient; more frequently strict parental discipline is called for, even to the point where she upon whom it is "inflicted" imagines herself ill-treated. But the wise mother and father will know that even though rebellion follows the edict which says "No" to two or three dances a week or pumps and low neck frocks in January, the girl who is brought safely and healthfully through this tempestuous period of her life will never cease in future years to be thankful for such discipline. But wise companionship, understanding and thoughtfulness on the mother's part will do more than any form of punishment.

Let us give our girls above all else the wonderful heritage of real health. Upon that, and that principally, depends true happiness.—Isabel Sinclair.

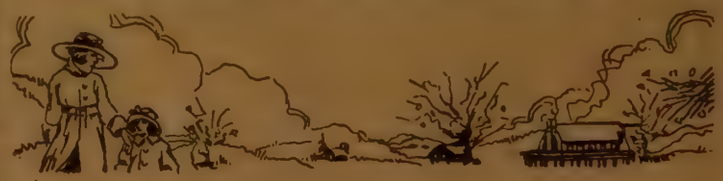
Adoration

By June Francis Dale

MOTHER and I walked out today upon the pasture hill,
And wandered up the woodsy path that leads to Rippling Rill.
I watched the gentle breezes play with Mother's pretty hair,
While roses came into her cheeks. She looked so lovely there.

WE found some shy, new violets—the pleasantest surprise—
But they were not one-half so dear as Mother's azure eyes.
She laughed and sang and played with me and told me fairy lore,
While I caressed her soft, white hand and kissed the rings she wore.

SHE doesn't have the silken gowns of royal ladies fine,
But where is any Princess with a mother sweet as mine?
I never knew how wonderful she really was, until
We walked together up the path that leads to Rippling Rill.



Prize Lemon Pie

In answer to the request in Orchard and Farm for pie recipes, I will tell just how I have gained a family reputation for the best lemon pies. They are easily made, and everyone thinks they cannot be excelled.

For one pie the following ingredients are required:

One cup sugar,
Two eggs,
Tablespoon of butter,
Three tablespoons of flour,
Juice of one lemon,
One-half of grated rind of one lemon.

Mix sugar, yolks of eggs, butter, flour and lemon together thoroughly. Pour a cup of boiling water over this, stirring constantly. Cook, without scorching, until it is clear and the consistency of a thick cream. Beat up the whites of the eggs; add one tablespoon of granulated (not pulverized) sugar to each egg white.

Pour the lemon filling into a previously baked, short pie crust. Cover with the meringe. Place in moderate oven until a rich brown. The same ingredients are doubled for two pies, with the exception of the eggs; only three eggs are used for a double recipe.

This recipe has never failed and won the first prize for lemon pies at a county fair in Ventura.—Mrs. Will E. Temple, Sacramento, Cal.

Using Dried Vegetables

Many households still have on hand dried vegetables, which should be used before the summer products are again available. While many sections of California enjoy winter gardens, hundreds of families dried the products of the 1918 "drive." One good method of using dried vegetables is to make "Julienne" soup mixtures.

Amounts of various ingredients making up the mixtures may vary according to personal tastes, provided care is taken that the nutritive value of the soup be kept as high as possible. Several mixtures made according to the following recipes have been found entirely satisfactory:

No. 1

1 cup tomatoes
¾ cup carrots
½ cup celery leaves
½ cup corn
¾ cup onions
¾cup cabbage
¼ cup green peppers.

No. 2

½ cup celery leaves
½ cup green peas
⅙ cup green peppers.
½ cup corn
⅓ cup onions
¾ cup cabbage

No. 3

⅔ cup tomatoes
½ cup cabbage
¼ cup onions
½ cup rice or barley.
¼ cup carrots

Dried products called for in any of the above recipes should be thoroughly mixed together and stored in a heavy pasteboard container with a close-fitting cover. One-half cup will make five to eight plates of soup, enough for the average family.

To prepare the soup, soak one-half cup of any one of the mixtures over night in four cups of cold water. Cook slowly for two hours in the water in which they were soaked. Then add four cups of soup stock and continue cooking for one hour. Salt to taste and serve hot.

In case all dried products called for in the recipes are not available, others may be substituted. Or, if desired, various kinds of fresh vegetables such as potatoes, carrots and turnips may be used in connection with available dried products. These may be cut in small cubes and placed in the container in small amounts shortly before the soup stock is added. Larger or smaller lots of the mixtures may be made by increasing or decreasing the amount of each ingredient called for.

For the School Lunch

While most mothers recognize the value of a hot liquid, such as cocoa, malted milk or soup with the school lunch, the expense and fragility of the ordinary vacuum bottles make their use for school children almost out of the question with most families. One enterprising rural housewife, however, devised a home-made bottle which, by actual test, has been found to keep liquids hot for four and one-half hours. In addition to its insignificant cost, this bottle possesses the advantage of being almost unbreakable.

It was made from a large-mouthed salad oil bottle with patent metal cap, an oatmeal carton, some excelsior and 13 cents worth of oilcloth for a cover.

Later experiments showed that sawdust, hay, burlap, paper pulp, or any similar soft materitl may be used instead of the excelsior to pack around and under the bottle inside the carton. The principle of the bottle, of course, is the same as that employed in the manufacture of fireless cookers. The packing retards the escape of the original heat for a considerable period of the time.

The oil cloth is sewed tightly all over the carton and serves also to hold the bottle and the packing in place, the mouth of the bottle extending slightly above it, though a hole cut the proper size. An inexpensive and convenient addition to the bottle would be a knitted or tied "carrier," with handles, made in the shape of a round bag to fit the completed bottle container.

Use of Old Stockings

Old stockings worn at the knees can be cut off and hemmed. These make good socks for small children in the summer. New feet can be cut from old uppers and used. New stockings should be reinforced at the top with old stocking tops to keep the supporters from cutting through. Old stockings may be sewed together and made into baby overalls to slip on over the creeping baby's underwear. Stocking tops folded make good kitchen holders when made into the desired shape with edges overcast. Closely woven tops make good wristlets for children. Stockings also make good mittens to wear when working in the garden or yard. Tops, white and black, of ribbed stockings are often used to make stocking caps for small children. White stocking tops are often used to piece out sleeves and legs of winter underwear. Stocking legs make good sleeve covers. "Hopeless" stockings make good mops when cut open. Old silk stockings make good dust cloths.—Hazel Zimmerman.

If you haven't a soap shaker in the home by all means get one. The same result—conservation of soap—is attained by soaking the small soap scraps in water and then using the soapy paste resulting to wash dishes, but the shaker is a great convenience and will soon pay for itself in soap saved. The small pieces soon collect in sufficient quantities to fill it, while if no means of using them is devised, they frequently slip down the drain pipes or are lost in other ways.

Need a dustless duster? No need of buying one. Take an old pair of stockings, cut off the feet, cut open the legs at the seam, wring the material out of kerosene, hang on a line to dry. Simple isn't it?—and effective, too!

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, Examiner Building, Los Angeles.

2740—A Smart Frock.

Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 5¼ yards of 40-inch material. With plaits extended, the skirt measures about 1¾ yards at the foot. Price 10 cents.

2752—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. It requires 1 yard of lining 27 inches wide for the underwaist, and 3 yards of material for the dress, for an 8-year size. Price 10 cents.

2749—Girl's Dress.

Cut in 5 sizes: 4, 6, 8, 10 and 12 years. Size 10 requires 3½ yards of 36-inch material. Price 10 cents.

2392-2400—Lady's Costume.

Waist 2392 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 2400 is cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. The entire dress will require 8⅝ yards of 36-inch material for a medium size. The skirt portion measures about 1¾ yards at the foot. Two separate patterns, 10 cents for each pattern.

2762—Lady's Dress.

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5¼ yards of 44-inch material. Price 10 cents.

2750—Lady's Cover-All Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42, and extra large, 44-46 inches bust measure. Medium size will require 4½ yards of 36-inch material. Price 10 cents.

Cut in 4 sizes: 3, 4, 5 and 6 years. Size 4 requires 1¾ yards of 27-inch material for the waist, and 1⅛ yards for the trousers. Price 10 cents.

2596—Girl's Dress.

Cut in 4 sizes: 4, 6, 8 and 10 years. Size 6 requires 2¾ yards of 36-inch material. Price 10 cents.

2760—Lady's House Dress.

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 6 yards of 36-inch material. The dress measures about 2¼ yards at the foot. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for our up-to-date spring and summer 1919 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking, also some points for the needleworker, illustrating 30 of the various simple stitches, all valuable hints for the home dressmaker.

A good water supply, a complete sewage-disposal plant, and effective heating and lighting systems constitute the four prime utilities of the farm home, the foundations of safe, comfortable living.

Deterioration of water may be due to causes that make it unwholesome, but not, so far as known, destructive of health.

Her friends never knew that the dainty apron she wore was made from one of her husband's old shirts.

When Buying a Piano

Think More "How Good" Than "How Cheap"

Pianos like everything else are priced according to their intrinsic worth. When you buy a piano it is usually intended for a lifetime—then special care should be used in its selection.

It is to your interest to go to a reliable dealer, and when making your selection think more of how good a piano you can get than how cheap you can buy it.

We invite you to call at any of our stores—or write us asking for illustrated catalogs and prices.

We are dealers in Steinway and other Pianos, Pianola Pianos, Aeolian Player Pianos, Player Music, etc.

Sherman, Clay & Co.

Kearny and Sutter Streets, San Francisco
Fourteenth and Clay Streets, Oakland
Ninth and J Streets, Sacramento
325 E. Main Street, Stockton
J and Merced Streets, Fresno
190-192 S. First Street, San Jose

Stores also at Vallejo, Portland, Seattle, Tacoma, Spokane.

Rheumatism

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

For Style, Fit and Wear buy

Mayer

HONORBILT SHOES

For all the Family

Ask your dealer for Mayer Shoes. Look for the trade-mark on the sole.

F. Mayer Boot & Shoe Co., Milwaukee, Wis.

MILWAUKEE Mayer CUSTOM MADE HONORBILT

$4800 A YEAR on a 50-foot lot raising Rufus Red Belgian Hares and Flemish Giant Rabbits. We furnish high grade stock and pay $7.00 a Pair, also express charges, for all you raise from same. We need 3000 weekly. Get our FREE BOOK telling how to feed, breed and house. Get started right. Don't breed common rabbits. DAVIS & SON, 128 AVE. 31, LOS ANGELES, CAL.

GOOD PROFITS TO AGENTS

Cabbage Cutter with 6 Knives

that always keep sharp. Slices cabbage and all other vegetables easily and rapidly. Sent prepaid for $1.50; 2 for $2.00. LUSHER BROS., Elkhart, Ind.

SAVE

~~$10.00~~ TO ~~$15.00~~

$20.00 TO $30.00

per cow per year with a

DE LAVAL

CREAM SEPARATOR

Formerly, with butter-fat at 25 to 35 cents a pound, a De Laval Cream Separator saved $10 to $15 per cow per year over gravity skimming.

Now, with butter-fat selling at 50 to 65 cents a pound, and even higher, the saving with a De Laval is doubled.

If you have only two cows and are selling cream or making butter, a De Laval will soon save money enough to pay for itself.

With butter-fat at present prices you need a De Laval more than ever before, and if you already have an inferior or half-worn-out separator, your cream loss with such a machine is too big to be neglected.

The best cream separator you can get is the only machine you can afford to use these days, and creamerymen, dairy authorities and the 2,325,000 De Laval users all agree that the De Laval is the world's greatest cream saver. They know from experience that the De Laval skims the closest, lasts the longest and gives the best service.

Order your De Laval now and let it begin saving cream for you right away. See the local De Laval agent, or, if you don't know him, write to the nearest De Laval office as below

De Laval Dairy Supply Co.

THE LARGEST DAIRY SUPPLY HOUSE ON THE PACIFIC COAST

ALPHA GASOLINE ENGINES
IDEAL GREEN FEED SILOS
ACME FEED CUTTERS
JAMES BARN EQUIPMENT
VIKING ROTARY PUMPS
LAUSON TRACTORS

EVERYTHING FOR THE DAIRY
Catalog of any of these lines mailed upon request
61 BEALE STREET SAN FRANCISCO
Over 2,325,000 De Lavals in Daily Use.

Planet Jrs. increase your production and lessen your cost

You get bigger and better crops with less expenditure of time, labor, and money, for Planet Jr. tools enable you to cultivate easier, quicker, and more thoroughly. They are time-tested tools, so careful, accurate, and substantial in construction that they last a lifetime. Fully guaranteed.

No. 90 Planet Jr. Twelve-tooth Harrow, Cultivator and Pulverizer is a prime favorite with farmers, market gardeners, strawberry, sugar-beet and tobacco growers. Its twelve chisel-shaped teeth and pulverizer leave the ground in the finest condition. Adjustable to both width and depth, making close, fine work easy.

No. 90

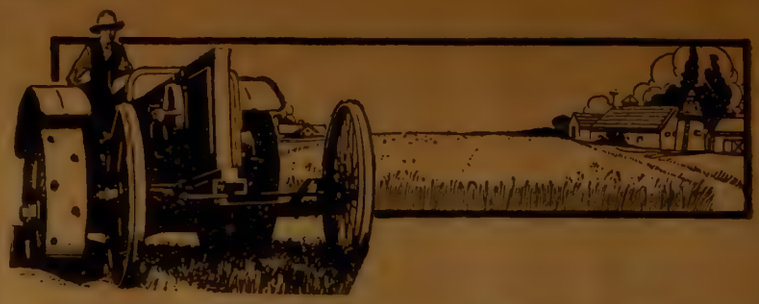
No. 25 Planet Jr. Combined Hill and Drill Seeder, Double and Single Wheel-Hoe, Cultivator and Plow sows all garden seeds from smallest up to peas and beans, in hills or in drills, rolls down and marks next row at one passage, and enables you to cultivate up to two acres a day all through the season. Straddles crops till 20 in. high, then works between them.

Box 1106D
S. L. ALLEN & CO. Inc. Philadelphia

72-page Catalog, free!

Illustrates Planet Jrs. in action and describes over 55 tools, including Seeders, Wheel-Hoes, Horse-Hoes, Harrows, Orchard-, Beet- and Pivot-Wheel Riding Cultivators. Write for it today!

Agencies in all principal Pacific Coast cities.



A Real Steel Horse

OF THE many unique designs of tractors, perhaps none shows more originality than one recently developed by an eastern genius. Power steering and line control (just as is used in driving horses) are two of the most interesting features of this unique machine. By the use of the lines, it is claimed, the operator can control the machine from any point in the rear, handling the implement at the same time.

The lines control the motor speed, clutch, gear shifts and turning mechanism. The power required for steering comes from the motor camshaft at the rear end between the last cylinder and the bell housing of the flywheel. Bevel gears carry it to a splined shaft upon which are keyed two leather cone clutches having a collar between them that fastens to a fork held by tension springs. This arrangement holds the clutches in a fixed position when not in use.

Without interfering with steering, the lines also operate the clutch. Connection is made in such a way that the first four inches of pull on the lines retards the motor speed and successive additional pulls alternately throw the clutch in and out.

Farmers are awaiting with interest the time when this new iron horse shall be exhibited at demonstrations and placed on the market for general distribution.

Trades for Tractors

THERE seems to be less and less of a disposition on the part of tractor dealers to accept old machines in trades on new ones. This condition may be traced, no doubt, to the strict contracts required by manufacturers. But we question very much whether this time-honored custom ctn permanently be avoided by the dealers. It stands to reason that the dealer has a better opportunity to dispose of a used tractor than the owner who wishes to buy a new one. As service facilities are improved, moreover, the dealers will be better able economically and thoroughly to overhaul these used machines.

Competition in the tractor selling field is certain to increase rather than decrease as more and more farmers become tractor owners, and as new makes are put on the market. It will be up to the dealer to name a price on the old machine which will permit of his re-selling it, if not at a profit, then without loss, thus protecting his new sale. The farmer who buys a new machine has every right, it seems to us, reasonably to expect a good trade, one which will not result in a big profit for the dealer on his old machine, and which will assure him of fair value received. The automobile dealers have met and solved the problem of handling old cars. Why cannot the tractor dealers work out the same problem in connection with this newer, but similar industry?

Can the Tractor Operate in Crowded Orchards?

That the small, yet powerful machine can successfully work close up to the trunks and under low-hanging limbs is being daily demonstrated in California. This photograph shows how an Orange county grower does deep chiseling in an old grove, without injury to the trees.

A Tractor Hitch for Two Seeders

Power farmers are continually devising special hitches for drawing several implements or doing two or more kinds of work at the same time. The experiences of different ranchers who have used inventions of their own all point to one important fact: The hitches must be flexible. Any attempt to tie several implements together with rigid construction usually results disastrously.

A Tulare county farmer who had been using only one seeder, discovered that his small tractor would pull two as easily as one, provided the proper hitch were used. Since one of the seeders must run slightly behind the other, in order that they will overlap sufficiently to cover all the ground, he used a shorter tongue on one than on the other. A "caster-wheel" or tongue-truck was fastened at the end of each tongue and an angle iron was extended between the two tongue ends to hold the machines the proper distance apart.

The tractor was hitched to angle irons extending from and connected with the casters. The desired flexibility was obtained by the use of swivel joints where the tongues and angle-irons were attached to the casters.

Efficient Handling of Manure

A MANURE pit doesn't cost money; it saves money. The value of the manure saved when stored in pits will equal at least 5 per cent on the pit investment. Where manure is stored in loose, flat piles in the barnyard, the loss by leaching and decay in six months amounts to from 30 to 60 per cent.

Water tight pits are the best means of preserving manure. Such pits will usually be constructed of concrete. They should hold the liquid, and keep the solid material nearly, if not quite, saturated. It is not absolutely necessary that such a pit have a roof. A roof is necessary only where there is no pit to hold the leachings. Saturation prevents heating, which is a potent source of loss. The normal rainfall on the manure will offset evaporation and insure better saturation.

Capacity Required

Milch cows and horses will together produce a little less than a ton of manure a month to a thousand pounds of live weight. Twenty cows and horses would produce fifteen to twenty tons a month or 100 tons in six months from November to April, inclusive. It will weigh from 50 to 70 pounds a cubic foot, depending upon the packing and the degree of saturation. At 60 pounds a cubic foot, there would be required about 3300 cubic feet of storage space. This would be provided by a pit six feet deep by fifteen feet wide by forty feet long. The material could be piled on a pit thirty feet long, other dimensions the same.

Cost of Pit

With 10-inch walls and a 3-inch bottom, there would be required about 700 cubic feet of concrete, which at 65 cents a cubic foot would cost $455. The excavation, reinforcements and other costs might run the total to $500 or $600, or between $25 and $30 an animal—$4.50 a ton storage capacity. With a 25 per cent net saving, 30 tons of manure would be conserved. At a dollar a ton in the pit, its value would be $30 or interest at 5 per cent on the maximum investment. For many crops the value would be $2 or $3 a ton, or 10 to 15 per cent on the investment.

Where manure is not to be immediately used and no storage pit is available, a properly made compost heap will most quickly prepare the material for application where immediate results are desired, being especially valuable in truck gardening and the production of small-fruits.

The compost should be started by throwing up four to six inches of soil, with a shallow trench around the base to prevent the accumulation of water. It will be well to cover the soil with a layer of absorbing material such as leaf mould, peat or straw, of sufficient thickness to absorb any liquid which may seep through the manure.

Building the Heap

The manure should be lightly packed on the layer of absorbing material and if other fertilizing materials, such as phosphates, garbage or dead leaves, are to be used, they may either be mixed with the manure or spread on in alternate layers. The heap is best built conical-shaped and when of sufficient bulk should be covered with from two to four inches of soil, well packed to exclude air. Fermentation will begin immediately and continue until the whole mass is thoroughly rotted. It is advisable to give the pile occasional attention as it will decrease in bulk, and in its settling, cracks in the earth covering may be formed which will admit air and cause a loss of the nitrogen content.

The length of time required for thorough decomposition will depend upon conditions, but six months is regarded as a safe period, during which all weed seeds will likely be destroyed.

A Covered Concrete Manure Pit

While a roof over the pit is not a necessity, it is favored by Pacific Coast farmers, especially in the northern section where the more heavy rains occur. It may be the means of preventing loss by leaching if the pit is kept well filled, as is likely to be the case during the wettest weather when spreading is difficult or impossible.

Seed Legislation

It is to be hoped that the recent introduction by Senator Rigdon in the California Legislature of Senate Bill No. 70 will result in the establishment and maintenance of strict seed control measures. The State Horticultural Commission and other bodies, as well as most farmers' organizations, are back of the seed control program, a sorely needed one in California. Better seeds mean better agriculture and increased production, and the new law, properly administered, would mean protection for the farmer.

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Ordinary disc harrows do not answer behind tractors. They cannot be made to do good work and at the same time stand the heavy strain of power use.

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Engine Flexible Double Disc Harrow

means fast and thorough tillage. Works the ground twice with one operation, leaves it level, penetrates deep, and makes the ideal seedbed. Enables you to get your fields in shape to plant when chances are best for bumper crops.

The "Roderick Lean" Engine Flexible Double Disc Harrow is designed and built for power use. Cuts 8, 9 and 10 ft. with flexible connection between front and rear sections, and patented double draft bars which insure even depth of cultivation. Light draft. The only tool of its style on the market, and endorsed and recommended by many tractor builders as the proper equipment for power use.

This is the harrow you need for tractor power—the tool it will pay you to buy. Write for descriptive literature and name of dealer nearest you where you may see this great tool.

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EDITORIAL DEPARTMENT OF ORCHARD AND FARM

~ TIMELY TOPICS AMONG FARM FOLK ~

J.C. Knollin, Editor

Our Editorial Policy

Farmers First

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things; looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

Phantom Figures

IS THE farmer's dollar really larger than it was four years ago? It has become a popular pastime among manufacturers of equipment, machinery and supplies used by farmers to point out how many less bushels of wheat or sacks of potatoes are required to buy their products now than before the war.

"Observe closely," they urge with bland smiles, "we have nothing up our sleeves to conceal; we would not deceive you for the world." And then they proceed very deftly to produce columns of convincing figures, which they juggle dexterously, thus proving, to their own satisfaction at least, that goods which have been marked up 45 per cent are really cheaper—oh yes, much cheaper—than when sold at reasonable prices.

Let us take for instance the case of a piece of farm machinery formerly selling for $175 and now worth $300. When wheat was $1 a bushel these mathematical geniuses point out, it would have required 175 bushels to buy the implement; with wheat at $2, however, only 150 bushels are required—a "saving" of 25 bushels at $2, or $50.

Very simple, isn't it? It reminds us of the figures which show beyond a doubt that a cat has 10 tails:

No (0) cats have 9 tails
One (1) cat has 1 tail
—
(Adding) 1 cat has 10 tails

There is even a method, we believe, of proving that black is white. The clever mathematicians, however, in figuring out how the farmer's dollar has expanded, fail, for some reason best known to themselves, to take into account the fact that every expense entering into the growth of these crops has tremendously increased; in some cases, more than doubled. Two-dollar wheat, with labor, fertilizer and machinery costing twice as much as formerly, can scarcely be considered twice as valuable as $1 wheat produced with cheap labor and materials. We do not claim to be particularly adept at figures; in fact, we usually have to add the grocery bill three or four times before we know whether we have enough money to pay it.

But, for the life of us, we cannot see how this strange hypothesis can be so deftly and triumphantly brought down to the Q. E. D. without cool ignoring of apparent facts. Now, how do they do it?

A Good Time to Play Safe

CONSENSUS of agricultural opinion seems to be that this is a poor time to undertake expensive development projects on the farm, especially those offering uncertain prospective returns. While Orchard and Farm does not wish to go on record as discouraging in any way legitimate, far-sighted progress and improvement, it would seem that the peculiar conditions now existing call, rather, for concentration of effort upon the more productive lands. In fact, it would appear to be the part of wisdom to limit our present effort largely to the carrying out of known, tried projects.

Seed, labor and equipment prices seem to be still on a war basis, and indications are that they will continue to be high for some time to come. In order, then, to realize good returns for the heavy investment now required to carry on any agricultural endeavor, the farmer must place his money in such a way that big production and consequently good returns will be assured.

It is very easy under present conditions to sink large sums of money in the development of poor or new land. To float any untried enterprise also will require more capital now than, perhaps in a year or two years hence, entailing, in addition, a greater element of risk. The farmer, then, who posesses good, paying land will do well to devote every effort to making it produce maximum yields until such time as normal prices and a more plentiful supply of labor prevail. Then it will be possible to carry on the development work profitably in conjunction with the growing of regular crops, or, in other words, as a side line.

This advice is not intended to convey the idea that we should all "hedge in"; not at all! For our national prosperity depends upon carrying on business as usual. By all means, let us invest in any kind of equipment which will improve conditions or increase efficiency and production on the already organized farm. Nor is it intended to give the impression that this is any time to take things easy. The situation calls for the hardest kind of work. But this work must represent organized, not scattered, effort; it must represent energy directed along the straight path to sure returns. We believe that the year 1919 will prove to be a good one for the agriculturist who gets down to business and at the same time "plays safe."

Is the Farmer Narrow-Minded?

THERE were signs of rising anger, not to say contempt, upon Uncle Wiseacre's face as a flip young drummer, new to the town, passed out of Jud Whitson's store one Saturday evening after a vain attempt to interest the proprietor in some "swell jazz shirts" and "classy neckwear."

"It lives and breathes," murmured the old philosopher in apparent awe. "It talks almost human—but it ain't! It kaint be! I reckon it's a good thing thet young sport don't realize how much he has to learn er he'd put on a collar a size smaller then he's wearin' an' choke himself t' death. Th' idear o' him a' comin' in here an' talkin' about th' narrowness o' th' farmer. What th'—— what does he know about farmin' er anythin' else but cigarettes an' toilet water?—him thet was prob'ly born in a narrow room in a narrow flat on a narrow street, and is so narrow now thet he don't throw a shadder when he stands edgeways Huh! Narrow farmer! Huh!" And the old man spat viciously, albeit dexterously, into the open door of the stove.

"Why, fellers," he continued, following up a line of thought suggested by the dapper drummer, whom he had now apparently dismissed from his mind.. "Th' successful farmer is the broadest man they is.. He has t' be broad-minded er he couldn't hold down his job! Nowadays he has got to be up on book-larnin', right up-to-th'-minute, and him that has the least time t' read has got t' do th' most readin'. He's got t' be a student, a blacksmith, a lawyer an' a hoss-doctor. But thet ain't near all. Oh, no!

"He's got t' understand finances an' bankin'; he's got to be producer, middleman and consumer. He dabbles in big business, an' havin' closed a $20,000 deal, he's liable t' turn carpenter, or butcher, or surveyor before night. He's got t' be a good mixer an' a better trader; an expert gas engine mechanic an' a good jedge o' beef an' dairy cattle, hosses, hogs, fruit, grain, vegetables an' poultry, not t' mention human nature.

"But how about th' city an' perfessional fellers? Th' doctor spends his life tryin' t' figger out where all th' doctors that come before him made their mistakes. Th' lawyer goes t' school till he's too old t' learn anything an' then don't think about nothin' but gettin' into th' bar, which is generally th' place where he spends most o' his time an' his clients' money. Th' engineer sees only one angle t' everything, thinks in circles, dreams of figgers an' finally dies with wheels in his head. So it goes; name any class o' men you want to an' you'll name men thet is a heap narrower than th' farmer o' t'day.

"Why, he has t' be everything thet they are an' then besides thet he's got t' be a weather prophet, a low buyer, a high seller, a good guesser, a chauffeur, mule-tamer, harness-maker, gardener, hunter, soil expert, well-driller, dep'ty sheriff, plumber, bookkeeper, correspondent, advertiser, member o' th' school board, road grader, labor expert, diplomat an' pugilist! Narrow, huh! There ain't nothin' a farmer ain't, unless it might be a preacher. I have heerd tell o' farmer-preachers, but I reckon they must a took up the preachin' business first."

On Your Toes

A MAN signing himself "A. Hogg" once wrote to the editor of his favorite paper for advice.

"I am getting discouraged," he complained in his letter. "Because I am a little man I do not command the respect that is accorded a big, strapping fellow. I am, therefore, handicapped in my efforts to get ahead. What can I do to overcome this difficulty?"

The reply was short and to the point: "Root and rustle; many a fat hog started life as a runt."

Men may learn a good many valuable lessons from animals. There is the case of the bantam hen. Called upon to hatch four turkey eggs, she rose to the emergency, and by fluffing up her feathers well, managed to cover them. Moreover, she finished what she had started by hatching the four big eggs and raising the young turkeys. Towering above their diminutive but attentive foster-mother, the four bronze beauties made an interesting exhibit at the Searcy County (Arkansas) fair last fall. This little hen was bigger than her job.

Most difficult jobs look big only from a distance. The closer we get to them the smaller they appear to be, and the sooner we get close to them the more quickly do they diminish in size. Success in this day and age is not measured in terms of beef and brawn. Nor need a man's accomplishments be determined by the distance from his head to the ground. "On your toes," is the watchword of the hour, and the little man who is "on his toes" can usually see over the top.

Action or Reaction?

Don't listen to the fellow who talks pessimism. America is in such an enviable position as compared to the countries of Europe that it seems as though some ray of hope must penetrate even the deepest gloom of the chronic kicker. Wealth, freedom, opportunity—we have them all. Are you getting your share of happiness and prosperity or wondering why you do not?

Making the farm pay may be the means of ruining it. Some farmers fail through "making the farm pay" for carelessness, neglect, and unwise methods. There are two kinds of "paying farms." One makes money and the other takes money.

Uncle Wiseacre says: "A lot of people think an insurance policy is some kind of charm thet shields them from all harm. As fer me, I carry 'accident and life,' but, seein' as how th' one wouldn't soothe no aches and pains and th' other would be spent by somebody else, I allus take care never t' approach my mules from behind."

Air-Castles

THE present day prophet has an advantage over those of olden times, for he at least has the assurance that no matter how startling his forecasts, there is not likely to be anyone who will cry, "Impossible!"

We may therefore indulge with impunity in a little flight of fancy suggested by the news that Lieutenant Harold Compre, late of the State Horticultural Commission, is now hunting bugs in his airplane. He is making a survey for the U. S. Bureau of Entomology of the area in Texas which has been quarantined against the pink boll-worm, and expects to locate large cotton plantings in the prohibited zone and "pin-point" them on a map of that region. The lieutenant believes that by the use of his plane he can complete in one week a survey that would ordinarily require the services of four men for several months.

We frequently find ourselves conjecturing as to what service the airplane will be performing for individual stockmen and farmers within the next few years. Perhaps its first important application will be on the great western cattle and sheep ranges, where long distances will be annihilated in a few minutes, and where herds, flocks and isolated animals which sometimes elude owners and inspectors for days, will be immediately located by means of a bird's eye view. Why not the boss of the round-up, covering in a few hours his entire range and directing the movements of the cowboys by wireless through the foremen at their portable receiving stations? Think how much time and hard riding could be saved, and how few animals could elude the branding iron! Supplies, too, could be rapidly conveyed to isolated camps; buyers taken to mountain pastures and returned to town the same day.

Instead of riding for days through rough country, to see that various outfits remained in the territories allotted to them, the forest ranger could inspect his division in a flight of a few hours, and at the same time observe every little column of smoke which might mean destructive fire!

To bring the idea down to the more intensively farmed sections we can readily imagine the town postmaster running out to watch for the coming of the mail. Instead of looking up the railroad tracks he scans with shaded eyes the sunlit sky. His keen ears detect the hum of a motor and in the distance he sees a speck which grows larger and larger. There is a sudden roar, a swoop almost to the earth, a wave of the hand, and the mail sack drops with a thud in the big white circle on the lawn of the town square. Within a few minutes the rural carrier whizzes forth in his car, and the California farm housewife finds herself within 24 hours of the New York styles.

Perhaps, again, some laborers are needed quickly to harvest a damaged crop. A wireless telephone message from the farm bureau to the nearest city labor office brings a giant passenger's plane with twenty men, ready to commence work the next morning.

And so one might dream on—and on, secure in the knowledge that we are living in an age when nothing is surprising and that possibly, yes probably, we of the present generation will live to see these things—and more.

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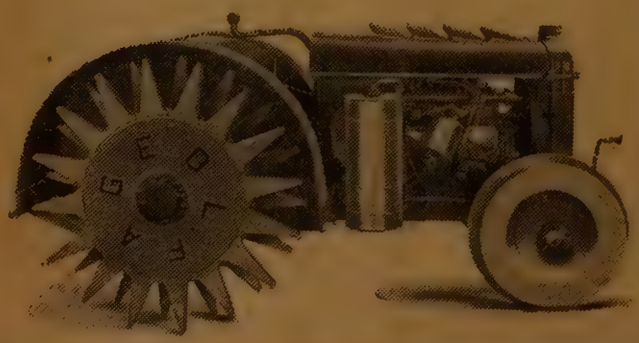


251-3

ECZEMA

Also called Tetter, Salt Rheum, Pruritus, Milk Crust, Water Poison, Weeping Skin, etc.

DR. CANNADAY
Eczema Specialist for 15 Years.

For fifteen years I have been treating one disease alone, ECZEMA. I have handled over one million cases. I do not pretend to know it all, but I am convinced the disease is due to an excess of acid in the blood, and closely related to rheumatism and cancer. This acid must be removed.

Eczema is called by some people Itch, Tetter, Salt Rheum, Pruritus, Milk Crust, Weeping Skin, etc. I am fully convinced Eczema is a curable disease, and when I say it can be cured, I mean just what I say—C-U-R-E-D, and not merely patched up for a while to return worse than before. It makes no difference what other doctors have told you, or what all you have tried, all I ask is just a chance to prove to you that this vast experience has taught me a great deal that would be of help to you. If you will write me today I will send you a free trial of my mild, soothing, guaranteed treatment that will do more to convince you than I or anyone else could in a month's preaching. It's all up to you. If you suffer any more with eczema and refuse to merely write to me for free trial, just blame yourself. No matter where you live, I have treated your neighbors. Merely dropping me a postal today is likely to give you more real comfort in a week than you ever expected to enjoy again. Do it right now, your very life may be at stake.

J. E. CANNADAY, M. D., D-1 Court Bk., Sedalia, Mo.

Reference: Third National Bank, Sedalia, or ask your banker to find out about me.

Send this notice to some poor sufferer from eczema. It will be a kind act by you.

Trapping Feathered Vagrants

The common sparrow was long ago indicted and the case has never developed any ray of hope for him. In addition to causing an annual loss of thousands of dollars to agricultural products, he wages incessant warfare on some of our most delightful native birds. Therefore, off with his head!

THAT vagrant of the feathered world—the English sparrow—causes a tremendous amount of damage to fruit, grain and vegetable crops in California. When leagued with his equally unwelcome ally the linnet, he becomes an especially serious pest.

In connection with the campaign for the destruction of English sparrows, which has been waged for a number of years in some sections of the country, particularly in the East, no agency has produced better results than the sparrow-trap. This device is made on the principle of the wire fly traps with which we are all familiar. A New York farmer caught an average of 60 sparrows a day for several months with a trap such as is here described; this is at the rate of over 20,000 a year! His trap was square, but the round type produces equally good results and is cheaper and easier to make. A Tennessee farmer, using three traps for a period of 15 months, reported the capture of 5000 sparrows. The spring months, he believes, are the best for trapping, as it is possible at that time to catch many of the young birds. Results like this, so far as we know, have not been obtained in California because of the absence of severe winter weather, but trapping is entirely feasible, especially in isolated rural sections.

How It Is Made

This trap may readily be made by any "handy man"; or in fact by a boy or woman. The frame work consists of four hardwood sticks (H. H.) which are allowed to project eight inches below the edge of the lower cone of netting to serve as "legs" as shown in Fig. I. These sticks should be about four feet long and one inch thick.

The netting should be three or four feet in width, and seven times as long as it is wide. Fig. II represents the manner in which the piece of netting is cut. The part above section No. 4 (Fig. II) is wasted in making only one trap, but may be used where several are constructed.

The netting should be of No. 20 wire, with one-half inch mesh, galvanized after it is woven. About 10 yards of soft wire, No. 20, will be required for binding together the edges of the netting.

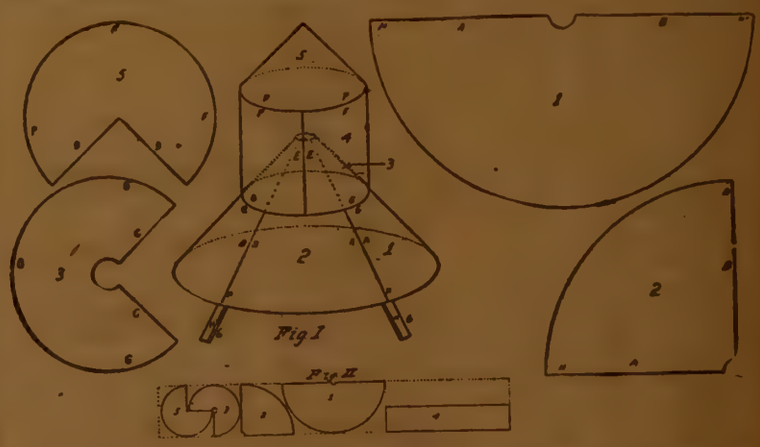
When the five pieces have been cut, as shown in Fig. II, the edges are wired together, A to A, B to B, etc., and the netting fastened to the sticks with small wire staples.

The trap when completed consists of a bottom section (2 in Fig. I) made in the form of an inverted funnel, and a turret.

The turret which in Fig. I is shown in position over the apex of the large bottom section, is removable. It has a cone-shaped bottom which fits over the apex of the lower part of the trap, and a hole, six inches in diameter coinciding with a similar hole in the apex of lower section, through which the birds can fly upward. This opening in the bottom cone of this turret also serves as a hand-hole through which the captured birds may be taken out. If desired, an extra turret may be provided, so that imprisoned birds need not immediately be removed. This auxiliary turret is then fitted to the trap while the other is being employed as a cage.

How It Operates

The principle of operation is simple. Grain is scattered lightly about the trap and a train of it carried to the space under the center of the large inverted funnel. The birds soon find the bait and follow it to the larger pile at the center, where they fill their craws and then try to fly away. The bottom of the trap is about 5 feet in diameter, and they seldom find their way out, but fly upward instead, immediately coming in contact with the sheet of wire netting, which slopes upward. The birds follow this slope to the hole in the apex, and pass through into the turret in which they are held prisoners.



Although the fact is not generally known, the English sparrow is a toothsome morsel, and when caught in numbers, may be used for friccasse or in pot pie. A number of bird clubs whose members have employed sparrow traps for the protection of song birds which the sparrows are known to drive away, report that a properly cooked sparrow pie is "delicious."

An Interesting Letter

To Orchard and Farm:

Enclosed please find check for subscription to your valuable journal. In my opinion, it ought to be in every home in the State. If the subscribers, after reading the paper, would hand it on to others, it would encourage them to subscribe and all would be benefited. At times a single article is worth the three years' subscription. —J. W. Woodman, Hooker, Cal.

Pernicious Bounty Laws Drafted

Do you know that there is now pending before the State Legislature a bill providing for bounties on birds which, although generally regarded as destructive, are really more valuable alive than dead? The use of snap judgment may result in injustice to the farmer's feathered friends. The writer of this article not only objects to the inclusion of such birds as the roadrunner and butcherbird in the blacklist, but insists that the bounty system in itself is unsatisfactory. If you believe in bounties, Dr. Bryant can give you a good argument.

By Harold C. Bryant

California Fish and Game Commission

MORE acts relating to fish and game than of almost any other nature are introduced into the California Legislature. If all of the proposed laws were good ones, taking into consideration proper protection and conservation of fish and game, all might be well, but the greater majority are not of this character.

A review of legislation relating to fish and game will show that not only are good laws continually shelved and poor ones passed, but also existing laws are continually changed by selfish interests who look to their own desires rather than to the welfare of the community.

Situation Unchanged

At the present session of the Legislature there have been fewer bills introduced than in past years, but there is plenty of evidence that such selfish individuals are still attempting to break down good legislation and supplant it with that which will allow increased local advantages to the few, to the disadvantage of the many. One assemblyman has introduced no less than three bills, each one providing that his particular section of the country be exempted from protective regulation of several different species of game animals and fish.

The Bounty Fiasco

The usual pernicious legislation providing for bounties is also in evidence. It is surprising to note how many persons believe that predatory animals are the principal cause of the decrease of game, and that the bounty system is the proper measure for reducing them. Nor is California alone misled. In spite of the forcible arguments that have been advanced against it, each state has had to experiment with the bounty system. Pennsylvania has recently given the method a good trial, with the result that enormous sums of money have been paid out. Between 1906 and 1916 Wisconsin paid $480,428 in bounties on wolves, lynx and wildcats. Could the saving in game be anywhere near commensurable with this amount? Could even the saving in livestock pay the bills?

California should have learned her lesson back in 1892, when the State treasury was depleted through the payment of a $5 bounty on the coyote and when fraud marked almost every transaction. Most serious objections to the bounty system are invariably to be found, first, in the great expense, which is usually out of proportion to the benefits obtained, and, second, in the opportunities for fraudulent misrepresentation which are always afforded. To be sure, the bounty system is beneficial under certain conditions. Where predatory animals are a sufficiently adverse factor and not too numerous to deplete the treasury, the system may be of more value. Our State bounty on the mountain lion and county bounties on coyotes during outbreaks of rabies are cases in point.

Misplaced Hatred

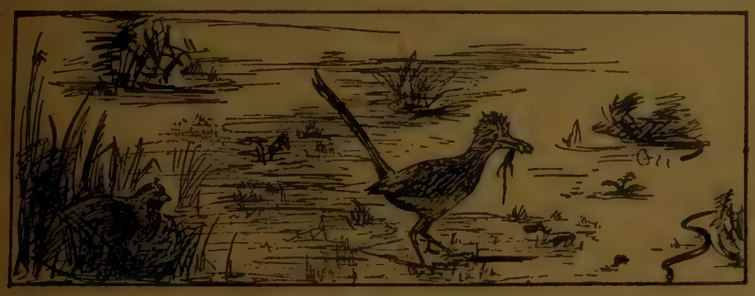
Another danger of the bounty system is that very often bounties are paid on species which are more valuable alive than dead. Before the lawmakers at the present time is a bill which provides bounties on such destructive birds as the great horned owl, the bird-eating hawks and the English sparrow, together with such valuable birds as the pigeon-hawk, sparrow-hawk, road runner and butcherbird.

An uninformed person, judging the bird by its name, might consider the pigeon-hawk a destructive bird. But in view of the bird's food habits, such a decision would be manifestly unfair. The pigeon-hawk is a rare hawk about the size of the sparrow-hawk, and, like the latter, feeds largely on injurious insects and mice.

The roadrunner has been proved far more beneficial than harmful, and the old theory that this bird destroys the eggs and young of quail has been exploded. Although a butcherbird may occasionally destroy the young of song birds, a study of the bird's food habits shows that it is a splendid mouser and destroys quantities of grasshoppers and other injurious insects. Many a farmer can tell of numerous times when a butcherbird has followed his team as cocks of hay were loaded on the wagon, capturing the mice that ran out from each haycock. This summary of food habits is not based upon hearsay or circumstantial evidence, but upon the result of painstaking investigations, including actual stomach examination.

It can be seen, therefore, that the bounty legislation now before our Legislature is doubly unreasonable in that the bounty system as a whole is wrong, having been so branded by the United States Department of Agriculture, and in that there are included valuable birds, the destruction of which would be adverse to the interests of agriculture.

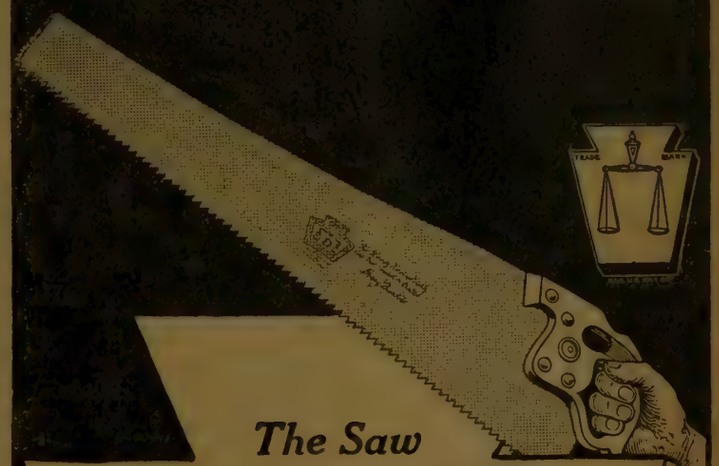
Let us, by all means, study the relation of birds to agriculture and provide legislation which will offer the farmer relief from really injurious species. But why turn to a system which depletes the treasury without commensurate results, is always attended with fraud and misrepresentation, and always involves the destruction of valuable birds or animals?



Innocence Vindicated

Apparently the roadrunner has been falsely accused of destroying the nests and eggs of valley quail. Stomach examination has shown that insects, mice, lizards and snakes, rather than the eggs and young of birds, furnish the principal means of sustenance.

DISSTON
SAWS AND TOOLS



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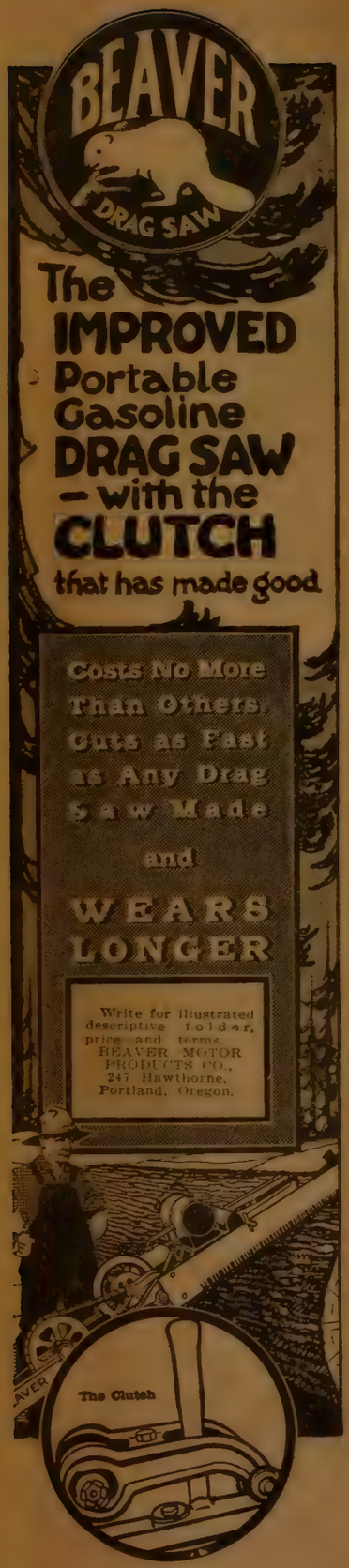

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Hardy W. Campbell's valuable book, "Progressive Agriculture," is being offered for sale, including three years' subscription to Orchard and Farm, for $1.25. Mail your order today.

Kindergarten Helps for Tiny Tots

An understanding of some of the principles employed in modern kindergarten practice will be of great assistance to farm mothers who sometimes find themselves hard put to answer the eternal childish question: "What shall I do?" Less don'ts and more do's are recommended by educational experts.

TOPSY, in Uncle Tom's Cabin, is not the only youngster who properly may be described as having "jest growed." Altogether too many tiny tots never know very much about what we call "bringing up." But, fortunately, few if any of these little waifs are to be found in the rural communities visited by Orchard and Farm. They are mostly caged in the city slums.

Nevertheless, even in the best regulated households, where there are children there are sure to be big problems. Not the least of these is that of furnishing interesting and profitable indoor amusement for the tiny tots, too small to be members of pig and calf clubs, and not yet strong and tall enough to "help Daddy with the chores."

Kate Douglas Wiggin says, "How, inexpressibly tiresome is the everlasting 'Don't' in some households. It is don't get in the fire; don't get in the water; don't tease the baby; don't interrupt; don't contradict; don't fight with your brother, and don't worry me now; while in all this tirade not one word has been said about something to do."

Froebel, the founder of the kindergarten, studied to give the children something to do. If a mother's and father's demands are such that they cannot take time for study, they may at least share the interests and pleasures of their children in ways that constantly suggest themselves. By doing this they will enter into a paying partnership with their boys and girls, and, later on, will have less reason to complain that the children seek other homes for diversion.

When a mother allows little daughter or son to use the tiny board and rolling pin at cookie-making time, or permits the toy broom, dustpan and brush, wash tub or little iron to serve a purpose, she is not only beginning a partnership, but laying a foundation for real usefulness later on.

Enjoying carefully restricted play with cup, pint and quart measures or even the scales helps the child to gain practical knowledge. There are times when he may even play with the fireless cooker and demonstrate to his satisfaction that he can fit the right cover in the right compartment and place one utensil within another.

Fortunate the small boy or girl who is allowed to play train with chairs or use them for cages in the zoo; who may appropriate the waste paper basket for a hen-coop, and use the clothes basket for a boat.

One mother I know shows the spirit of partnership as she sits in her rocker, sewing. She calls the following "rocker" games:

1. The tea bell is placed on the floor. From a given spot the children roll marbles to hit the bell.

2. Mother is the kitty and the children are mice. Kitty's dish is placed back of the rocker, where mother cannot see it, and then from a corner farther back a mouse comes on tiptoe to try to pick up the dish without kitty's knowing it. If ever so little noise is heard, kitty cries, "Meow," and the mouse runs to the corner to give another mouse a turn.

3. The "groceryman" knocks at the door. Mother gives orders which are written down in make-believe. Then the goods are delivered.

4. The "iceman" calls with wooden blocks, which make fine cakes of ice.

A father has ample opportunity to be a partner with the older children. There may be a chance to share in the care of animals, and carpentry and garden tools offer unlimited possibilities for co-operation.

Instead of forbidding his child to touch the typewriter, one father taught him the alphabet on it. As the boy grew up he used it for certain school work and letter writing.

Nora A. Smith suggests the keeping of a diary to help in cementing the family partnership. In this is recorded each evening the events of the day, the weather, and so on.

One of the most delightful pleasures to be shared in the home is reading aloud. All these things tend towards the two great essentials: Harmony and happiness.—Maud Burnham.

Powder and Fertilizer

An Oregon subscriber, A. J. Averill of Medford, has invented a blasting cartridge which serves the added purpose of fertilizing, medicating or inoculating the soil in which it is exploded. He has been granted a patent on this unique contrivance. The principle is that the explosion of the blast may be utilized to force minute particles of any desired substance into the surrounding soil for a considerable distance around the charge, assuring quick availability as well as thorough distribution of the material.

I wish that I could break away
From this mad city whirl,
And breathe the scent of new-mown hay;
And find a country girl
Who'd love me true and be my wife,
And make good apple pie.
Oh, boy! That is the finest life
Beneath the azure sky.

We'd have a lot of pure-bred stock,
Some Clydesdale cows; and, say—
I'd surely want a well-matched flock
Of Holsteins, brown or gray.
A herd of handsome Duroc hens—
Some high-bred Leghorn swine—
Of Berkshire sheep some well-filled pens
Oh, that's the breed for mine.

Then I'd go in for high-grade fruit
And vegetables, you know.
Some navel apricots would suit,
And maybe we could grow
Choice radish-hearts to sell for cash—
Or luscious turnip greens!
And raise delicious succotash
By crossing corn and beans.

Each morn we'd pluck spaghetti, red
From our own spreading vine—
Or dig, perchance, a cabbage-head
And salt it down in brine.
The simple life is hard to beat;
For me 'twill be a source
Of wealth, I'm sure, when I complete
My correspondence course.

—JUSTIN NUTT.

The Older They Are—

(Continued from Page 12)

information, might have suspected that the interview had angered him. He walked rather slowly in the direction of the Widow Martin's house. "Gee, what a sour specimen of a woman," he muttered to himself. "And her insinuatin' about the Widow Martin's character, when I know verra wull Mrs. Martin is as far above her as th' stars above th' rain clouds there. Oh, wull, it takes all kinds of people t' make a wur-rld. Alkali, eh? And hard-pan. I might a' known they was something agley with th' wee place. It's a gude thing I looked about a bit. Accordin' to that I'll have naught to do with her little farm. I'll slip by an' see her in th' mornin' an' tell her I've decided not t' buy." And as he was now almost opposite the Martin house he drew over into the heavier shadows at the opposite side of the road, and in the gathering darkness swung down the narrow footpath towards the town.

"Ah, that's th' system when ye deal with th' wimin'," he thought, with satisfaction. "Find out who their enemies is, and ye can get all th' information ye want. Ye can't leave a bunch of wimmin' t'gether in a hoos, er a neighborhood, er a county er a State, that they won't be a-rowin' one with th' other inside o' ten days." And, absorbed as he was in his own reflections, he almost collided with another pedestrian who was approaching, heavily laden with bundles, from the opposite direction.

"Why, Mr. McGowan!" exclaimed a pleasing and familiar voice, "you must be having very deep thoughts, for you almost rode rough-shod right over me, bundles and all."

"I do beg yer pardon, Mrs. Martin; it was verra careless of me. It is quite late fer ye on this lonely road, and ye are quite a distance from home," he added.

"I am awfully sorry you did not find me in," answered Mrs. Martin. "I was delayed at the store where I went to see about employment. I am planning to move close in and secure work at Isaacson's just as soon as I dispose of the place. I suppose you came back to talk business. I am so sorry I was detained."

"No inconvenience at all, ma'am. I wanted a little time t' consider th' proposition, anyway. May I walk back with ye, and help with th' packages, ma'am?"

CHAPTER III

Strangely, business did not enter into the conversation which ensued and continued long after the little cottage had been reached and the cozy interior revealed by shaded lights. Widow Martin found that Mill John knew some Scotch songs, and it was not long before she was accompanying him at the piano while his terrible bass rumbled and reverberated through the rooms. Mrs. Martin did not have much difficulty in persuading John to partake of some excellent coffee and applie pie; in fact, he even accepted a second piece of the pie, pronouncing it unsurpassed by any he had ever eaten. And when he finally departed at 11 o'clock it was with a strange and new mixture of feelings.

That he was, indeed, undergoing a very pronounced change was further demonstrated the next morning when, with an utter disregard of expense, he sent her a one-pound box of chocolates. Fear of public recognition of his downfall, however, caused him to have the package delivered by a small boy, to whom, as further evidence of a complete surrender, he gave the sum of 25 cents. The clerk at the store where he made his purchase diagnosed the event as one of the rare occasions when Mill John was down to "blow himself" for some sweet or trinket for his own use. And all of Ardendale remained ignorant of what was developing in their very midst.

That is, all of Ardendale except one inhabitant. Mrs. Matilda Hilden had found some business down the road immediately following John's pause at her house, and in his subsequent meeting with the widow, and the apparently familiar terms with which he accompanied her back to the cottage, together with the boisterous singing and late departure, had found sufficient material to make a very interesting story. This she proceeded, with such embellishments as suggested themselves, to spread recklessly about the neighborhood and town.

One evening a few days following his memorable visit at the Widow Martin's home, John was walking towards his rooms after a hard day at the mill, when he heard voices from the corner of a near-by poolroom. He would have passed unconcernedly by had not the mention of his own name suddenly arrested his attention. Unobserved by those within, he paused and listened.

A loud guffaw followed the statement which had included his name. Then he heard a shrill, unpleasant voice, which he recognized as that of Frederick Bisbee, a clerk at Isaac-

(Continued on Page 44)

Up in the Air

(Continued from Page 3)

When each farm is equipped with an airplane, the perishable farm produce will move all the way from the farm to its final market by air. The saving of time that this will effect, the elimination of waste that will result, and the greater number of people who will become possible buyers of the farmer's produce, will insure the farmer a greatly increased income.

Distance Annihilated

The effect of the airplane will be much the same as moving the farm into the city, or at least to its outskirts. Imagine, if you can, a giant airplane picking up an entire truck, poultry, or dairy farm and depositing it in the heart of San Francisco. It would be a rather valuable farm as soon as it came within sight of the city—and when actually delivered there, would be almost priceless.

The airplane cannot, of course, lift the whole farm at once, but it can bring the owner almost as close to market as though his land were located within the city limits.

Several great aerial highways have already been planned to traverse the middle-western farming States and to continue straight on to the Pacific Coast. The most northern of these routes, the Chanute and Bell Airway—named after Octave Chanute and Alexander Graham Bell, both among the early supporters and students of aeronautics—traverses Minnesota, South Dakota, North Dakota, Montana, Washington and Oregon, its more important stations being Minneapolis, Bismarck, Great Falls, Seattle and Portland.

Lincoln Highway of the Air

The next of the great air roads is the Woodrow Wilson Aerial Highway—which corresponds to the Lincoln Highway on the ground. It passes through Iowa, Nebraska, Wyoming, Utah, Nevada and California, and its more important stations west of the Mississippi are Des Moines, Omaha, Cheyenne, Provo, Salt Lake City, Carson City and San Francisco.

Further south are the Langley, the Rodgers and the Wright Brothers Airways. Other routes have been planned but these are "main roads." They indicate the progress that has already been made, and offer prophetic evidence as to the importance of the airplane era, now at hand. Nothing is impossible in America!

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Hosiery that Wears Longer than You Expect

Many women have written us that Durable-DURHAM Hosiery has worn better than they expected.

You will have the same experience when you try Durable-DURHAM. It wears longer because every pair is strongly reinforced at points of hardest wear.

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BIG SISTER

A fine, wide elastic out-size stocking with extra wide elastic top. Medium weight. Made from softcombed lisle-finish yarn. Strongly double reinforced heels and toes. Balbriggan, black and white.

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The tops are wide and elastic; legs are full length; sizes are accurately marked; soles and toes are smooth, seamless and even, and the genuine Durham dyes prevent fading under hardest wearing or washing conditions.

You should be able to buy Durable-DURHAM Hosiery at any dealer's. If not, write to our Sales Department at 88 Leonard Street, New York, and we will see that you are supplied. **20c to 50c per pair.**

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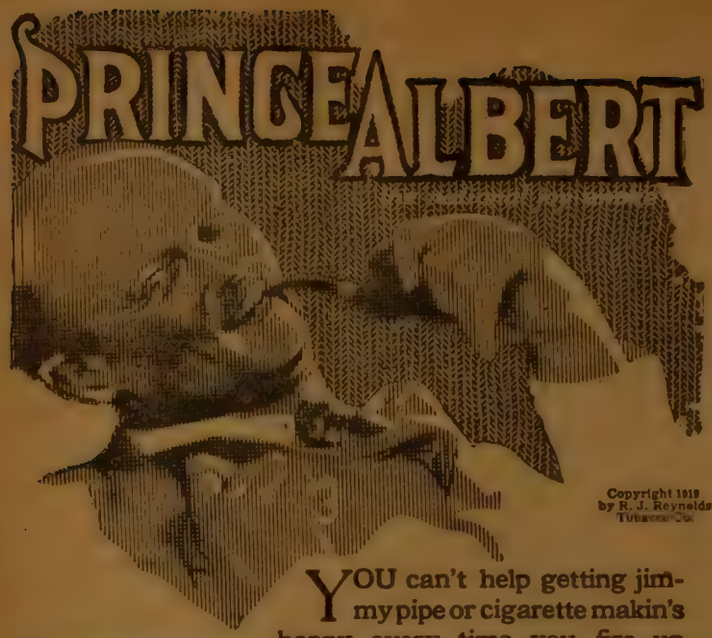

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Soon as you know Prince Albert you'll say that P. A. *did not* bite your tongue or parch your throat. *And, it never will!* For, our exclusive patented process cuts out bite and parch and lets the man with the touchiest tongue simply smoke his fill all the time.

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Soap-Weed Makes Cattle Feed

Formerly despised desert plant is put to a truly beneficial use on Southwestern ranges, during periods of drouth.

THE greatest handicap to the stock industry in the Southwest, it is generally conceded, is the heavy loss resulting from insufficient range forage or other feed for stock during long periods of drought; which have occurred in the past at intervals of from three to ten years. The idea of using soapweed as a supplemental feed originated with a practical stockman, who co-operated with the Forest Service in working out on the Jornada Range Reserve in Western New Mexico a plan for feeding the soapweed and for the management of the stock.

How It Is Used

The soapweed is cut or sliced into small pieces by a machine which works on the principle of the ordinary feed chopper, or is shredded or torn by a machine that works like a "wood hog." The chopped or shredded soapweed is fed to cattle together with cottonseed meal.

The experiments on the Jornada Range Reserve showed that a daily ration of from fifteen to twenty pounds—1 to 1 1-3 pounds of cottonseed meal and the rest chopped soapweed—will maintain the average breeding cow and may improve her condition slowly. During 1918 the cost of maintaining a cow on fifteen to twenty pounds of the mixed feed daily was $1.46 to $1.95 a month, besides the cost of providing water and salt and of handling the stock.

There is no ill-effect on the digestive tract of cattle fed on soapweed over a long period. However, poor cattle should not be fed all they will eat the first few days on feed, as there is a slight danger of loss from bloating if this is done.

Maintaining the Supply

It is pointed out that soapweed is slow-growing, occupies a soil highly subject to wind erosion, and is a protection to stock, so that it is advisable to use the plant only as emergency feed. In collecting the soapweed it is recommended, therefore, that only plants thirty-six inches and over in height be cut. Occasional plants tall enough for the blooms to be out of reach of cattle should be left for seed plants to restock the areas.

Here Is the First California Karakul Lamb

His skin was worth $30 when he was three days old! And this in spite of the fact that his dam was merely a half-blood coarse-wool ewe. The blood of an imported Karakul sire is responsible for the coveted tight, black curls which differentiate this little fellow from the ordinary lamb.

His skin, however, will not go into the making of a "Persian lamb" coat, for he is held too valuable for slaughter by his owners, the Kerman Karakul Sheep Company, of Kerman, Fresno County. They intend to keep him for breeding purposes, believing that he will prove a valuable addition to their already priceless flock of nearly 300 head.

According to Dr. C. C. Young, the organizer of the company, who recently brought the flock to Fresno County from Texas, the Persian lamb and Astrachan fur industry has an undeniably great future in this country, so long dependent upon imported skins. A great demand is anticipated, even at high prices, for the few rams which will be available for distribution.

In addition to its fur-producing propensities, the Karakul, according to authorities, is more hardy even than the goat, and in a cross with any domestic breed of sheep increases the size of body, quality of mutton and quantity of wool. Some of the largest Karakul rams weigh over 300 pounds. The breed offers interesting possibilities for the semi-arid sections of the Southwest, where severe conditions make the raising of regular range sheep a hazardous undertaking. The editor of Orchard and Farm will be glad to supply more information about these interesting animals to any reader who is interested.

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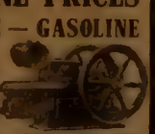

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San Francisco, Cal.

Raising Calves

FOR feeding calves, no grain ration has been found which will do as well as milk. It seems that milk contains some vital property which cannot be entirely replaced by any other food. There is probably something in the ash of the milk which does not exist in the same form in any other substance.

While there are no substitutes for milk which are perfectly satisfactory as a calf food, there are feeds which will do fairly well and are very much cheaper than milk at 25 cents per gallon. The most practical one of these, where specially prepared calf foods are not used, is one consisting of corn meal, linseed oil meal, and dried blood. These should be mixed in the proportion of 8 parts corn meal, one part linseed oil meal and three parts dried blood. To this should be added 1½ per cent of steamed ground bone meal. That would mean 1½ pounds of the bone meal to each 98½ pounds of the mixture.

This should be fed to the calf so that at about two weeks of age it is receiving 1 gallon of milk and one-quarter of a pound of the mixture stirred into the milk. At three weeks of age it should receive one-half pound of grain and three quarts of milk per day. At one month of age it should receive three-fourths of a pound of grain and one quart of milk. As the milk is diminished warm boiled water should take its place. It is advisable to continue feeding one quart of milk and one pound of grain daily until at three months of age, the grain mixture can be increased to a pound and a half per day. It is best not to dispense with the milk entirely until the calf is about five months of age.

One trouble with milk substitutes is that they sometimes cause digestive disorders which are difficult to correct. In case there is serious trouble in this regard, it is best to go back to the milk ration for a few days until the trouble is overcome, then gradually work back to the grain ration again.—W. S. Cunningham.

Dirt in Milk

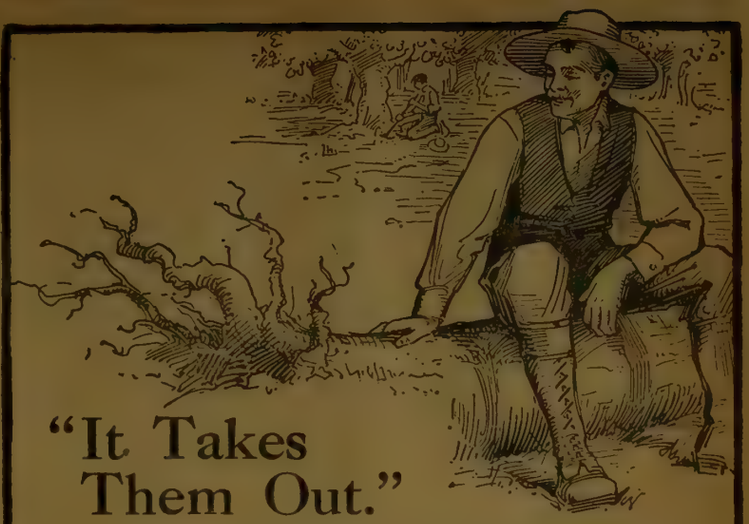
Lack of visible dirt in milk does not mean that it is truly clean. In fact, the larger part of the dirt with which milk becomes contaminated on the farm dissolves and cannot be seen. The following suggestions, if faithfully carried out, will result in a clean product.

Keep the cow in clean quarters. Remove the manure from the barn twice daily where animals are kept up all day. Keep the long hairs on the udder clipped back so they will not carry dirt so easily. Groom the cow twice daily, before milking. Use a small top pail. Use clean bedding only. Carry on no operation in the milking barn during milking hours which tends to raise dirt, such as feeding, haying and sweeping. Thoroughly clean all utensils which come in contact with milk.

Caterpillars Kill Hogs

Hogs have been killed by feeding on tent caterpillars in the Russian River Valley. Their stomachs, on dissection, were found to be completely filled with the silk material of the "tents," which had been formed into dense balls.

The tenacity of these webs will be appreciated when it is understood that in colder sections the web or "tent" is capable of protecting the pests by excluding rain, dew and frost.



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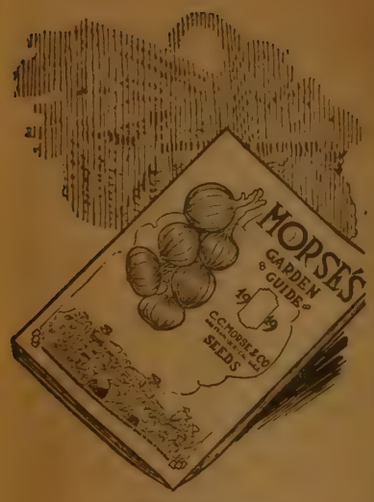

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for 1919

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Range raised and bred; summered in Idaho's beautiful forest reserves at an altitude of from 7000 to 9000 feet; big-boned, yet true to type, these animals represent the last word in dual-purpose sheep breeding.

They have in them the best imported and domestic blood that money could buy; they have been established at their present location over a quarter of a century. The ram which is picked by a range-man to produce early-maturing, market-topping lambs from his range ewes will win blue ribbons and grand championships in competition with the most pampered Eastern show-ring beauties. This has happened time and again. Range men know that "Knollin rams mean better lambs." Breeders know that no better Shropshire blood exists.

Lambs from this flock have won the Grand Championship for fat carload lot every time shown at Chicago International. Breeding stock took away some of the most coveted prizes at the Panama Pacific Exposition. It will pay you to investigate, as I am already booking advance orders. OCCASIONALLY A FEW EWES ARE OFFERED.

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Feeding Idle Horses

MANY diseases of farm work horses may be traced directly or indirectly to improper care during the rest periods. When a horse that has been working hard all week, and fed on a heavy grain ration, is "laid off" over Sunday or during a rainy period, without any reduction in feed and without exercise, some trouble is almost sure to arise. Azoturia, or "Monday morning disease" is usually accounted for by just such conditions. Animals which are laid off for any reason should be given more roughage and less grain, especially if they are kept tied in a stable. A pasture, or even a large lot, is, of course, the place for idle animals, when available. A bran mash is part of the Sunday evening feed for the work animals on many well-regulated ranches.

Will Twin Calves Breed?

The breeding ability of twin calves is a subject that is widely discussed and often misunderstood. Twin bulls are as sure breeders as bulls of single birth and there is no reason to suspect failure to breed when a bull is twinned with another bull. The same thing can be said of heifers that are twinned together. They are as sure to be breeders as any other heifers.

When a heifer and a bull are born together, however, the heifer is known as a free-martin. The bull, twinned with a heifer, is as certain to be a breeder as a bull of single birth, but the free-martin heifer is almost sure to be sterile. Only a very few free-martins have been known to breed, and the chances are very small that they will ever reproduce. As a rule it is not advisable to raise free-martin heifers, as they usually result in failures and are worth no more than their beef value.

Symptoms of Hog Cholera

If a hog has cholera, one or more of the following symptoms will appear, depending upon whether the disease is acute or chronic: Loss of appetite, partial or complete; sluggishness; lying in dark and secluded places; gaunt, unthrifty appearance and roughened hair; difficult breathing, commonly called "thumps" (if the lungs are affected). Some animals have a cough. Diarrhea occurs if the intestines are affected, but in some cases the sick hogs are constipated, and drop hard lumpy excretions, sometimes covered with mucus or blood. A discharge of mucus from the eyes and nose is often observed; and the eyes may be glued shut.

The movements are unsteady; the gait is weak and wobbly, especially in the hind legs. The animal often reels when trying to walk. A dark red, blue or purplish discoloration of the skin on the under parts of the body, abdomen, neck and inside the thighs, is frequently seen in acute cases. When the disease is acute, death may occur in from four to seven days, and in some outbreaks the attack may be so virulent that hogs are found dead before the owner knows there is sickness in the herd.

At other times the disease takes on a chronic form and the animals may linger for weeks, or death may occur in an infected herd from time to time over a period of several months. In case of doubt in the diagnosis, as when the foregoing symptoms are not well developed, a post-mortem examination should be made. If a pig which has died quite recently is not available, a sick one should be slaughtered and the carcass carefully examined for lesions of cholera.

Care of the Colts

A COLT well wintered is half grown, in the opinion of most successful horse and mule men; consequently, colts should have satisfactory rations, even if aged horses and mules are forced to take less desirable feed.

In official tests, colts have grown from 562 pounds in weight on September 15, to 897 pounds in weight on April 21, on a daily ration of 8.42 pounds of one-half shelled corn and one-half shelled oats and 7.8 pounds of hay. Colts can consume small quantities of silage, but if they are forced to eat large quantities they cannot be expected to grow as much as they would if fed more liberally on grain. Early and sufficient pasture is of prime importance.

Bran, when available, and a small quantity of oil meal may be fed advantageously. Exercise, fresh water and good quarters are necessary if best results are to be expected. It should be borne in mind that the colt which arrives at its yearling form stunted and thin will be handicapped for the next two or three years of its life and may, perhaps, never fully recover.

Paralysis in Ewes

Every lambing season reports come of the loss of fat ewes a few days before lambing. Those carrying more than one lamb are most frequently affected. This disease is known as "preparturient paralysis" and manifests itself by listlessness, aimless movements, tremors, distorted vision and paralysis, followed by death in from five to eight days. It has been found to follow the feeding of highly nutritious and especially dry feed, together with lack of exercise.

Prevention of this condition has been highly successful, while treatment is usually of no avail. Prevention consists in avoiding circumstances that make for excessive accumulation of fat. This can be done by limiting dry feed to ewes in the last month of pregnancy and by making them rustle for their food. Grazing in pastures containing green feed for one or two hours a day will have the effect of giving them succulent food and exercise at the same time.

A Warning to Stockmen

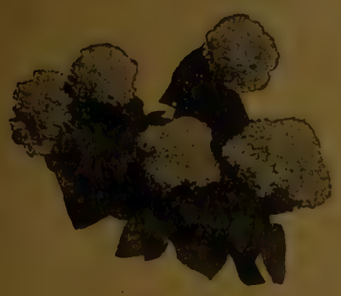
"Failure to maintain our livestock in proportion to our population means dependence on other countries," warns Dr. J. R. Mohler of the Bureau of Animal Industry. "It means dependence on them for meat, for leather and for animal fats. It means dependence on them also for fertilizers with which to maintain crop yields in the absence of manure. It may even mean dependence on them for milk with which to feed our children, as Europe lately has been depending on the United States for milk in condensed or powdered form. In other words, if we fail to feed ourselves or to satisfy our home markets, someone else will, and, in fact, is already doing so.

"Imports of meats and meat products by the United States in 1918 exceeded 100,000,000 pounds. These were received principally from Argentina and Canada. A report lately received from the American consul general at Buenos Aires contains some illuminating public remarks by the manager of an Argentine packing establishment. He stated that 'large quantities of canned meats are now regularly sent to the United States, the great cattle country of former years; also, 'that the United States can no longer be regarded as a meat exporting nation.'"

THOUSANDS OF FLOWERS

FROM SPRING UNTIL FALL

Flowering shrubs, the kind that bloom the first year, and every year afterward, present the simplest and most effective method of beautifying the home grounds. To make it easy for you —for every reader of Orchard and Farm—to do this, we have made up a collection of Hardy, Flowering shrubs of extreme beauty and rapid growth.

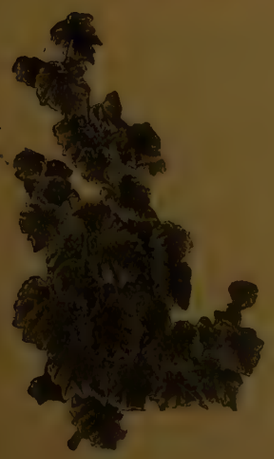


Nine Months of Beautiful Flowers in Every Year

Beginning in early spring, just as the snow departs, when the Cornus opens its great white flowers, there is a constant procession of changing flowers clear up to late fall, when the **Roses of Sharon** are ablaze with gorgeous coloring.

Our 8 Shrub Collection

is composed of one-year-old plants of good size, cut back to about a foot in height, the best size to plant for enduring results.



1 Cornus Florida Large white flowers, measuring 3 to 3½ inches across, appear very early in the spring, even before the snow is gone, and continue many weeks. The red berries which follow remain through the winter. Foliage red and gold in the fall.

2 Japanese Candleberry Follows Cornus with a mass of tiny yellow flowers. Its brilliant berries also remain through the winter, and have a high value as a natural dye.

1 Snowball Hydrangea Masses of stately white flowers are borne in such profusion as to resemble clumps of snow, and almost cover the foliage. Early to middle summer.

1 Deatzia Dainty, compound foliage. White or rose-white tassel-shape flowers are borne thickly, in wreaths, along the slender, drooping branches. Flowers in June, but the shrub is beautiful all summer.

1 Virginia Creeper A very persistent climbing vine, clinging to wood, brick, stone or stucco. The closely overlapping leaves make cool shade for the porch, and are resplendent with colors galore, in fall and winter.

2 Roses of Sharon Of rapid growth, quickly attaining a height of twelve feet. It bears masses of brightly-colored flowers through late fall when so few other flowers are in bloom.

Eight Flowering Shrubs Postpaid to Your Mailbox

Our Big Collection is carefully selected, and contains only those shrubs that have proven their worth under all conditions of soil and climate to be found on the Coast. This collection bears flowers of many colors, from earliest spring, through summer and fall, and to the very edge of winter. There is a variety also of leaf coloring, together with bright berries that cling through the winter.

Our 8 Shrub Offer

This wonderful collection of eight shrubs and flowers will be mailed postpaid, including one year's subscription, new or renewal, for 75c or including three years' subscription for $1.25. Add hundreds of dollars to the value of your home by improving its appearance. Even if your own subscription does not expire for several months, you may take advantage of this timely offer now and the subscription will be extended from date of expiration.

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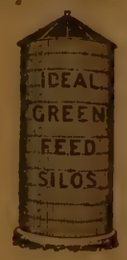
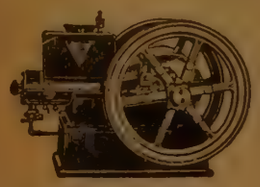


ENGINES AND PUMPS



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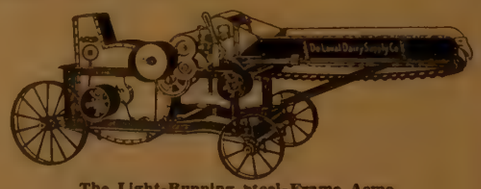

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Was Your Crop Ruined

last year by the early rains? Have you any assurance that the same thing will not occur again this year?

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affords you absolute protection against loss. It will dry your Fruits and Vegetables cheaply and quickly and just when they are ripe and full of flavor, or if the market is not favorable, dry them and hold till you get your price. Every grower has need of one or more of these machines. It protects you against all weather conditions and gives you a product equal to the sun-dried. The "SAHARA" is the most inexpensive and efficient dryer on the market. Fifty cents per day will cover fuel cost. The "Sahara" makes you independent of any organization as regards the handling of your fruits and gives you a product that will command the highest market prices.

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$673.70 From Half Acre Rhubarb

(675 boxes) first season after planting. Last season averaged $1.15 per box. Limited number plants for sale. Illustrated circular free.

W. A. LEE, Covina, Cal.

Essentials of Sorghum Growing

It will soon be sorghum-planting time. Wherever there are dairy cows or other stock to feed, increasing interest is being manifested in the grain and sweet sorghums. In this article are given some valuable pointers as to varieties, yields and cultural methods. For some of this information we are indebted to the State Agricultural Experiment Station, where much attention has been given to these important crops. Indications are that there will be a plentiful supply of good seed this year.

THE most skeptical opponents of corn raising in California have been forced to admit by this time that this is a real corn State. There can be no denying the fact, however, that under semi-arid conditions, where water in sufficient quantity to produce a heavy yield of Indian corn is either unavailable or too expensive, the sorghums offer our "best bet" for both grain and ensilage.

Even in Kansas, one of the greatest corn-producing States, 60 per cent of the silos, we are told, are filled with sweet sorghum. Tests conducted at the University Farm at Davis have shown that rations containing sweet-sorghum silage have proved to be slightly more efficient per unit of dry matter than those containing Indian corn silage. Greater interest every year is being manifested in this important crop, as well as in the grain sorghums, and no doubt there will be more extensive plantings this spring than ever before. The dairyman or stock-raiser who has had to purchase feed in quantities during the past year or two, will spare no effort this season to produce on his own land the maximum amount of forage and grain.

Time of Planting

While sweet sorghums may be planted as late as June and used as a second crop if water for irrigation is available, very early seeding is to be recommended for dry land. In the Imperial and San Joaquin valleys, experience has shown that April 1 is not too early a date for planting; in the Sacramento Valley and the Coast regions, the best time to plant is believed to be the middle of April. The time of planting should, to some extent, govern the choice of variety. Late planting calls for an early maturing variety, such as the Early Amber, or Red Amber. The Honey and Orange varieties may be relied upon to reach maturity as a second crop in the warmer sections, but should not be employed for late planting in the northern or coast valleys.

Variety tests have shown the Honey sorghum to be the heaviest yielding variety, an average of 27.43 tons per acre having been secured during a period of three years in experiments at Davis. When grown for silage under irrigation at Kearney Park in 1917, the Honey outstripped all others, producing 50.96 tons per acre, over 13 tons of which was secured in the second cutting. Of other varieties used in this test, only the Early Amber and Red Amber made second growths, but the Orange made a good showing as to tonnage. The Sumac and Gooseneck have found favor in the San Joaquin and Imperial valleys, but being late in attaining maturity and susceptible to frost, are not widely used elsewhere. Both are very high yielders when successfully grown.

Good Tillage Important

Cultural requirements are not rigid, but should be carefully observed. If the crop is to be grown on dry land, too much attention cannot be paid to the preparation of the seed-bed, with a view to conservation of moisture. The land should, if possible, be plowed in the fall or early winter. Those who have applied Hardy W. Campbell's methods as described in Orchard and Farm report exceptional success.

Tillage should be conducted with a view of securing a firm, moist bed of soil below the surface, and a mulch of two or three inches for the seed bed. University of California experts recommend working the surface down to a good mulch by means of disc and harrow immediately after the rains, and frequent harrowing until planting time to prevent the formation of a crust and to conserve the mulch and consequently the moisture. In case the rains and tillage have not sufficiently "firmed" the lower soil, it may be necessary to use a corrugated roller before seeding. In addition to packing the soil, this has the effect of bringing more moisture to the surface.

How to Plant

When the crop is used for fodder or silage it is usually planted in rows 3 to 3½ feet apart, at the rate of 2½ to 4 pounds of seed to the acre, depending on the character of the soil and amount of moisture available. Lighter seeding is to be recommended on soils of questionable fertility and low moisture content.

An ordinary corn-planter, fitted

(Continued on Next Page)

A Big Yield of Honey Sorghum

This crop, on the S. Husman Ranch, near Ingomar, produced thirty tons of silage to the acre. The stalks were from twelve to fourteen feet in height.

(Illustration Courtesy of Merced County Farm Bureau)

with sorghum-plates is generally used for planting the crop. By stopping up part of the holes, one may use a grain drill, but the drill sometimes plants too shallow, and wastes seed. The depth of planting should be governed to some extent by the nature and moisture content of the soil. The seed should be placed deeply enough to come in immediate contact with the moist soil, so that germination will be facilitated.

The use of the grain drill is to be recommended when sorghum is grown for hay or pasture, and is considered better than broad-casting. The rate of seeding in close drills is from 30 to 40 pounds to the acre. Broad-casting requires more seed than drilling.

Cultivation Important

Since the sorghums grow rather slowly at first, it is frequently necessary in order to destroy young weeds, to harrow just as the plants are coming up. If the surface of the soil is crusted, however, harrowing may result in damage to the crop, and the crust should be broken with the corrugated roller. In case of planting in rows, cultivation should be practiced as soon as the rows may be plainly seen, and two or three similar cultivations should be given at intervals of two or three weeks. After the plants attain a height of about three feet, no further cultivation will be required. Cultivation after each irrigation is considered essential by careful and successful growers. While the first cultivation may be rather deep, later ones should be more shallow.

Irrigation Pays

Although the sorghums have gained their favor largely by their adaptability to semi-arid conditions, irrigation usually pays big dividends in increased yields. The use of sorghums as a second crop, following grain and hay is, of course, possible only under irrigation. In this case it is customary in order to insure good germination of the seed, to irrigate just before planting.

Late irrigation stimulates the growth of suckers and should be avoided. Although thorough soaking of the ground just prior to seeding will usually provide sufficient moisture to mature the crop, it is usually advisable to give one good irrigation just as the heads are forming. Flooding is to be preferred to the furrow method, when possible, as it requires less labor.

Harvesting Pointers

Sorghum to be used for silage should not be cut until the seed is in the hard dough stage. If cut early, it is apt to be sour and of poor quality. The corn binder is generally used for large acreage. If intended for fodder, the plants may be cut earlier, just as the seed is forming. The fodder may be set in shocks to cure and either fed from the field or put in a stack. Thorough curing is essential, especially in humid sections, in order to prevent moulding.

Effect on Soil

One frequently meets with the assertion that sorghums are hard on the soil, but this effect if encountered at all may be traced rather to the poor physical condition in which the soil is frequently left because of the shallow root-system of the plants. Thorough plowing as soon as the crop is removed will do much to offset this effect, especially if the land is allowed to aerate for a month or two before seeding to another crop. Continuous cropping with sorghum is, of course, liable to work injury to the soil and reduce the yields. Rotation should be practiced.

The stubble and roots are usually rather difficult to plow under, but experience has shown that good work is accomplished by a 14 or 16-inch mouldboard plow, or by a large disc plow if used soon after the crop is harvested.

Spring Plowing

In case preparation of the land has been delayed until spring, it is not advisable to plow as deeply as in the fall, for it is then more difficult to prepare a good seed-bed. Last year, due to unusual weather conditions, many fields were planted late on spring-plowed land, and in most cases satisfactory results were obtained.

The Grain Sorghums

Particularly did the grain sorghums prove to be "life savers," many plantings having been made after it was too late to sow barley or wheat. Grain sorghums may be fed to livestock under any conditions where barley or corn can be used. In the South, grain varieties were planted up to June 15 last summer and with a rainfall of from 10 to 14 inches, produced from 2000 to 5000 pounds of grain per acre.

The grain sorghums attain their maximum development under conditions of high summer temperature and low atmospheric humidity during the growing season. They will not stand low temperatures. They are considered among the surest of dry land crops, this attribute being due primarily to their economical use of water rather than to their low water requirements. Most of the varieties are able to withstand prolonged drouth without apparent injury. Other things being equal, however, the yields obtained will usually be in direct proportion to the supply of moisture available, irrigation as in the case of the sweet varieties, paying good dividends.

Soil Requirements

Grain sorghums may be grown on almost any soil that admits of ready cultivation. Very sandy soils or very heavy soils are not desirable. In general, the cultural practices are the same as for sweet sorghums.

Harvesting Methods

The time of ripening varies from 100 to 130 days after the plants are up. The crop should not be harvested until most of the heads are fully mature. The common method is to cut the heads by hand. After harvesting the heads must be thoroughly cured by drying to prevent heating in storage. Thrashing is accomplished by a modified grain thrasher.

Grain Sorghums for Forage

Experiments conducted at the University Farm have shown that when employed as stover, fodder, or silage, the grain sorghums compare favorably with corn, the sweet varieties, however, having attained the greater favor for silage purposes in most sections.

Dwarf milo maize has become probably the favorite grain variety in sections where it can be grown. It has a number of advantages. It can be planted earlier than most varieties, germinates under a wider range of moisture and temperature than others, and has a wider soil adaptation, doing better than other varieties on very light and heavy soils and under adverse soil conditions. It yields heavier than other varieties and is less subject to bird injury than most. Twenty-five hundred pounds of thrashed grain per acre may be considered a fair yield, although yields of 6000 pounds and more are occasionally obtained under very favorable conditions.

Optimism

"Remember," says one who has had his share of ups and downs, "that when a teakettle is up to its neck in hot water, it keeps singing away."

A little oil in the right place may save considerable toil in the wrong place.

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THINK of the terrific conditions each link of a crawler tractor must meet.

Do you wonder that ordinary track links show wear quickly?

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AMSCO defies wear. The ordinary forces of friction and abrasion are seemingly powerless to make any impression upon it. So tough and unyielding is this super-metal that AMSCO gears and pinions are operated without oil.

On crawler tractors it has conclusively proved its wear-defying characteristics in such important parts as shoes, links, pins, grousers, lags, spacing blocks, sprockets, idlers, rollers, and transmission gears.

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We have recently published a booklet, "Tractor Parts," illustrated and done in colors, which will give you some good practical points and pointers. We're mailing it FREE; also a list of Tractors fortified with AMSCO Write us for it.

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Tillage, Not Weather, Controls Crop Yield
Campbell's Progressive Agriculture Tells How

Campbell

Is the man that put the great Central West on the map twenty years ago.

You may have known his every other year plan ten years ago, but his recent every year plan is far in advance. If correctly followed it defies the drought and gets good crops every year.

THE AUTHOR, HARDY W. CAMPBELL

Campbell

Surprised many in the droughty year of 1916 by growing good crops of corn where surrounding fields were dried up.

His new plan for every year cropping of wheat is responsible for numerous perfectly healthy stands of wheat surrounded by dead fields this eventful spring of 1918.

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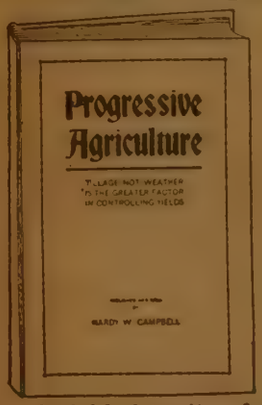

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ESTABLISHED 1888

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The Older They Are—

(Continued from Page 37)

son's store, whom he particularly detested.

"I guess she won't get no work at the store now. The story's all over town. Widow Martin and Mill John! Oh, ha, ha, ho, ho! Ain't that the——"

His laughter suddenly developed into a choking gasp, which changed to shrill cries of pain and fear as he was lifted from his feet by the scruff of his neck and shaken like a fox terrier in the grasp of a giant bulldog. One look at Mill John's face was sufficient to cause the rest of the crowd to melt from view. But Bisbee, white and shaking, found himself thrown violently into a chair in the corner, where, with bleeding nose and chattering teeth, he looked up at the towering form of the burly Scotchman. The veins on Mill John's freckled neck were taut as bow strings, and the fire that shot from his eyes put the fear of death into the heart of the shivering ribbon clerk.

"I didn't mean nothin', Scotty," he whined. "Let me go; honest, I——"

"Shut up!" yelled Mill John. "Shut up, de domned skulkin' blackguard of a scandal monger. Be thankful I'm lettin' ye live an' keep yer dirty mouth closed er I'll wash it out with laundry soap." He raised his arm as if to strike his victim, and then, as the latter cowered back into the chair, lowered it again.

"The likes of ye standin' around throwin' cigarette stubs on the poolroom floor is what keeps this a third-rate town," he roared. "We could do without ye and all o' yer kind an' be ahead in mind an' pocketbook. Tell me," and he raised his mighty arm again, "tell me, ye sneakin' skunk, where ye heard that stuff ye was sayin' to those other low-lived loafers. Tell me, quick!"

"I don't know, Scotty; honest, I don't. L-let me go."

"Get down! Don't ye move er I'll twist ye into a knot; tell me, quick, where did ye hear it?"

"W-well, it was told by some people at the store that said they saw—"

"What people? Who was it? You tell me th' truth er I'll make ye so—"

"Well, I—don't hit me again. I'll tell you; please don't. It was Mrs. Hilden that lives up near Mrs. Martin's house. She said she saw—"

"Get out o' here," interrupted Mill John. "Get out quick, ye low-down jackal. Ye'd better stay out o' my sight fer several days, I'm telling ye, an' th' next time some mean, small, contemptible gossip starts somethin' involvin' th' good name of a respectable woman an' a God-fearin' man ye had better not remember thet ye heard it." And he lifted the pale young man from the chair and flung him towards the door.

The culprit did not lose much time in accepting John's invitation to "get out." As for John, he walked rather limply and aimlessly back towards the mill and thence along a path which led indefinitely through the woods. He was confronting a new situation. He wanted an opportunity to think. And it was long past midnight when, weary and still troubled, he unlocked the door of his room and lay himself down, not to sleep, but to think the more.

CHAPTER IV

When morning came, however, he had made up his mind what to do. And having once chosen his course, he allowed nothing to swerve him from his determination. Making his excuses to Mr. Peters at the mill, he secured leave to spend the day on personal business, and after three hours spent at banks and law offices, set out for the little cottage which had been the cause of his present dilemma.

He was startled by the change in the Widow's face. She greeted him with the same warm cordiality, but her smile was undeniably wan, and her eyes, in spite of hasty attempts to cover the evidence, betrayed traces of recent tears. "You are just in time to have lunch with me," she said. "I am so glad you came." John again stumbled over the flower pot, but this time he went up the steps and into the house instead of rushing down the path.

How Mill John's Scotch tenderness broke through his gruff manner and drew from her the story of her life, and how he learned that she had just been denied the position on which she had counted because of some dreadful scandal which she did not understand is best explained by saying that we are dealing with the old, old story that is always young, whether the characters be youthful or gray. Strangely enough, when he told her, after the dainty dessert, that he had decided he could not purchase her place, she looked relieved rather than disappointed, and had there been any observers they might have discerned that all traces of grief and unhappiness had vanished from her face.

"I have decided," he said after they had eaten, "that I want to have a bit more land—a place not set out to trees—so I have bought a tract not far from here that is verra well suited for alfalfa. Will ye walk up the road with me while I complete the deal. It is only a bit of a way."

And so, strolling strangely like lovers, these two who had just disposed of a prospective business deal, walked together along the shaded boulevard on a perfect May afternoon. He turned in at the gate which led to a small green cottage. His companion drew back. "I don't want to go in there," she whispered. "That is where that dreadful Mrs. Hilden lives."

"I know, but I want you to come in with me," he replied. And mystified, but trusting, she accompanied him to the door.

"Mrs. Hilden," he said, when the occupant of the house answered their summons, and started back at recognition of her two callers. "I am John McGowan, th' man, you will remember, who called here some time ago to secure directions for reachin' Mrs. Martin's place, and Mrs. Martin, who accompanies me, is my fiancee. You will not be invited to the weddin'. In fact, I doubt verra much if you will even be in town, for I have bought th' mortgage that covers this place, which the bank has been carryin' for ye although long overdue, waitin' until ye secured some promised money which never seemed to arrive. Therefore, I notify ye that ye may either pay interest and principal at once or move, as I have other uses for the premises. Good day."

CHAPTER V

"And did you buy the place that you went to see that time," inquired John's employer on the day that the happy Scotchman and his bride were departing for their honeymoon. "I suppose that if you did you will make your home there when you return."

"No, Mr. Peters," answered John. "I bought another place not so far from there; but we shall not live on it. I shall rent it, and we will make our home at Mrs. Mart—er—Mrs. McGowan's home."

"I am surprised that you did not get the place you first investigated. You were so pleased with it, particularly with the orchard, that I thought you had just about decided to buy it."

"I liked the place verra much, sir, but ye see, there was considerable alkali in the soil, and some hard-pan, so I decided on th' other land." Out of the corner of his eye John saw his wife start, and then look confusedly in the other direction.

"Well, I'm glad you got what you wanted—and I'm speaking of more than the little farm," said the mill owner with a smile. "I wish you

(Continued on Page 45)

The Older They Are-

both a happy trip and a safe return. Goodbye."

"Goodbye! Good luck!" cried a score of voices as the train started. Mill John smiled down at his wife. She looked up at him happily but quizzically.

"Tell me, John," she hesitated; "how did—how did you know about —about the hard-pan and alkali?"

"Well, you see, my dear, I'm a purty gude judge o' such things; in fact, a sort o' soil expert, ye might say, but I know how we can dynamite that hard-pan and make those trees grow bonny fruit. I know, too, how to wash th' alkali out of that soil, after we return home and get th' well cleaned out."

"Well?" Get the well cleaned out? My, you are observing, John. No wonder you have been successful in making and saving money. You are a good business man. When you first came I would have sold you the place at a good price if possible, because you had such a reputation for close trading, and I thought it would be wonderful if I could get the better of you. But after—after you had been so kind to me, and especially after you whipped that contemptible Frederick Bisbee (oh, yes, I heard all about it); in fact, I should say after I began to—to care, why, I could not, I would not, have taken advantage of you. I would have told you about these things if you finally had offered to buy the house. You believe that, don't you, John dear?"

His answer was a kiss that seemed to answer her question satisfactorily, and he only said: "The wee hoosie is now yours and mine, lass; yours and mine to call home."

New Bulletins

> The Dean says: "If you would make the greatest success of agriculture, in any of its branches, employ a wise mixture of experimentation, theory and practical experience. The agriculturist who scorns 'book learning' is narrow. The theorist who knows nothing of practical things is more narrow."

AMONG the late publications of the United States Department of Agriculture are a number which are of interest to California farmers. Address the Division of Publications, U. S. D. A., Washington, D. C. These publications will be sent free to anyone who applies.

	Farmers' Bulletin
The Sweet Potato Weevil—Control	1020
Cattle Scab and Methods of Control	1017
Machinery for Cutting Firewood	1023
Straining Milk	1019
Canada Thistle Eradication	1002
Growing Peaches	917
The Principles of Liming of Soils	921
Control of Argentine Ant in Orange Groves	528
Some Common Disinfectants	926
Apple Bitter-Rot; Its Control	938
Haymaking	943
Practical Hints on Running Gas Engines	1013
Producing Family and Farm Supplies on the Cotton Farm	1015
Sweet Clover	1005

A recent bulletin issued by the University of California, and available upon application at Berkeley, is a treatise on "The Effects of Freezes on Citrus in California." Ask for Bulletin No. 304.

Other new University of California Bulletins are:

	Bulletin Number
Neufchatel Cheese	207
Jack Cheese	206

Bulk Shipping Facilities

Grain is almost exclusively handled in bulk in box cars throughout the Eastern grain-growing States. Most of these cars are equipped and marked for the purpose. Those same railroad facilities are now in use on the Pacific Coast railways and as a consequence are available for bulk shipment of grain. Undoubtedly the year 1919 will witness a great change in grain-handling methods in California. There is no question that bulk methods are the better.

Fact vs. Argument

"HE argufies an' he argufies, but he don't p'int out" was the complaint of Deacon Rastus White during the discussion about the new "Baptis'" preacher. This, we realize, is no less true of some farm papers. Orchard and Farm does not believe in wasting a lot of good paper and printing ink in simply "argufyin'" without "p'inting out" ways to make more money; to improve your ranch; to save time and labor and equipment; to make your home life more attractive; in short, to live a broader, more useful, more successful life. If we do not succeed in bringing valuable ideas and practical information to your aid in the solution of your problems, then we shall have failed in our mission. But we willingly submit each issue to the acid test, knowing that you can make Orchard and Farm a partner in your business.

COMPLIMENTING YOU

Do you read the advertisements carefully every month? It will pay you to study the classified market pages of each number. Of course, you have noticed what nationally known and advertised goods are brought to your attention through the display columns of Orchard and Farm. This does not occur through accident. For many years the big national advertisers have recognized the prestige of the GREAT WESTERN FARM MAGAZINE. To make this statement is not to blow our own horn, for every one of these big ads is a compliment to you—a testimonial to the quality and size of our circulation. Return the compliment by trading with Orchard and Farm advertisers; by buying the trade-marked goods described in each issue; by answering the announcements which interest you.

Get a Seed Catalog

Orchard and Farm replies to scores of questions every year which are clearly answered in the free catalogs published by the seed houses. The big, reliable dealers advertise in Orchard and Farm. They are anxious for the opportunity to send you their catalogs, free of charge. The up-to-date seed catalog is far different from the old-fashioned kind. It is revised every year to include new varieties and new discoveries. Usually less than half of its space is devoted to descriptions of plants and varieties; many pages are given over to planting calendars, suggestions for control of pests, and practical cultural information about each kind of vegetable, field crop or flower. Yes, the modern seed catalog is almost like a textbook. By all means, send for the new ones.

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Fruitful Labor of the Busy Bee

Honey production not its only sphere; honey sales not the only important source of revenue.

By Reece T. Blake

THAT California fruit growers have underestimated the importance to their industry of the honey bee is the opinion of E. R. Root, who is conceded to be one of the world's greatest bee authorities.

"I have made a close study of bees and their relation to fruit growing," says this widely known expert, "and I do not hesitate to say that fruit crops in this State, and in fact all along the Pacific coast, could be greatly increased by the more general introduction of honey bees into the orchards."

Mr. Root has been a bee keeper for nearly 50 years. He is now in the west conducting short courses on bee culture under the auspices of the University of California and the U. S. Department of Agriculture. He knows bees perhaps as they are known by no other living person.

"A few years ago while I was spending a short time in the prune orchards of the Santa Clara Valley," Mr. Root recently commented, "I came to the conclusion that there were not enough bees there to assist the fruit trees in bringing forth satisfactory crops, so I reported the matter to the University of California.

Bees Increased Prune Yields

"My recommendation was that a group of six trees in a representative prune orchard be completely covered with mosquito netting, and that a colony of bees be placed under each of three trees, while insects were prevented from reaching the blossoms on the other three trees. The result was that the trees under which bees were kept during the blossoming period bore overwhelmingly big crops that year, while the other three trees brought forth only a moderate amount of prunes. Since this experiment took place, bees have been introduced with excellent results into scores of the Santa Clara Valley prune orchards.

Mr. Root makes the startling statement that because of the proclivity of the insects for increasing yields, the keeping of bees is discouraged in the Pajaro Valley, where the big red apples grow. The apple growers, he says, claim that the bees so increase the productivity of the trees that breaking and splitting occur under the heavy loads of fruit.

Apples Greatly Improved

"There is no discounting the fact that bees make apples grow more abundantly, as well as increasing the size and quality of the fruit," says the bee expert. "Apple blossoms when heavily pollenized will bear larger and more luscious fruits than is the case where pollen is distributed solely through the agency of the wind."

Up in the Oregon apple country bees have been extensively introduced in the orchards, and growers who are pinning their faith to the honey-makers are harvesting heavier crops from year to year. Mr. Root claims that bees will prevent young apples from dropping off the trees. He asserts that the apples would not drop off in most cases if the blossoms were propertly pollenized.

Bees in Citrus Groves

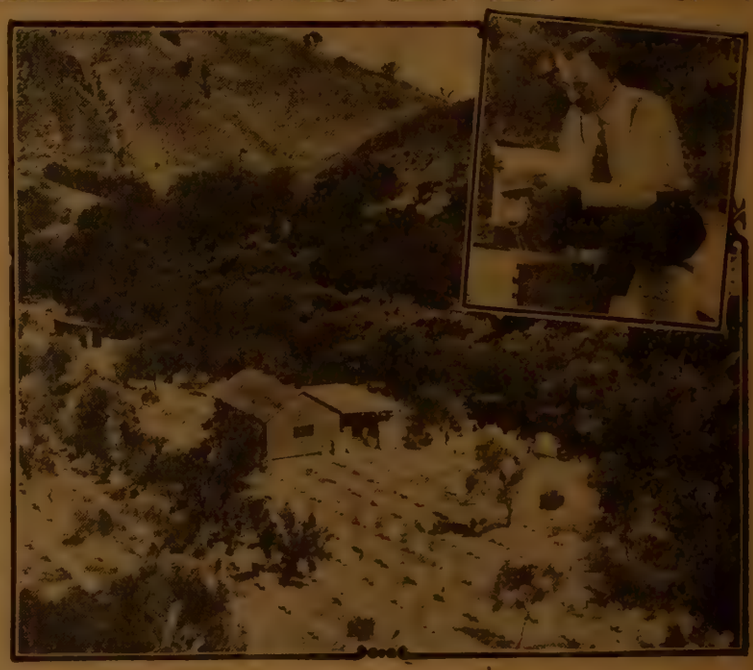
"The orange industry would be greatly benefited and the growers would find a new source of wealth if bees were introduced in all the orange growing districts of California," Mr. Root adds. "I am not sure that the navel orange since it is a seedless variety, would be greatly benefited by bees, although I do feel certain that its flavor would be improved to some extent.

"All oranges having seeds, however, would be improved in size, color and flavor by the activity of bees," he continues. "Darwin contends, and I agree with his theory, that nature will not produce a nectar to attract bees unless bees can be of benefit where the nectar exists. It is a fine example of the perfect balance provided by the Creator."

Bees Sometimes Essential

Mr. Root tells us that certain kinds of fruit cannot successfully be grown without bees. He cites the winesap apple as an example, but admits that the Baldwin is capable of pollenizing itself. He asserts that certain varieties of pears cannot be successfully produced without bees unless different varieties are interplanted, the trees of

(Continued on Next Page)



It Is Possible to Be "Stung" in the Bee Business

Even Mr. Root admits that, therefore he takes no chances. He is here seen smoking a hive of bees near Hollywood before taking them out for inspection. The Ventura County Apiary illustrated is characterized by the great bee expert as a typical Southern California mountainside commercial bee farm.

one variety in one row being relied upon to pollenize the trees of another variety in an adjoining row. It is his belief that bees solve these problems more easily than such artificial agencies as interplanting.

Saved An Industry

The case of the Cape Cod Cranberry Company of Boston is pointed out as one of the most interesting examples of what bees mean to the fruit industry. Ten years ago, when this company went into cranberry growing on a gigantic scale, it was discovered that new land adjoining established high-yielding cranberry bogs would not bring forth even half a crop. After considerable investigation into the probable cause of the crop shortage the company called in Mr. Root.

He learned that when small numbers of one-acre cranberry bogs were under cultivation the crops were large. Expansion of the acre tracts, however, had diminished the yield. After some deliberation Mr. Root expressed the opinion that there were not sufficient bees in the bogs. As soon as the company introduced a few big apiaries on the property the cranberry crop became normal; in fact, the production was even increased above normal.

Important for Clover

The same thing was experienced with alsike clover the country over. Canada grows alsike on an enormous scale. Very early in the game the alsike growers discovered that their clover would not produce well without an abundance of bees to fertilize the flowers. Canada, therefore, went into bee culture on a big scale and as a result the alsike seed business is now on a thriving basis.

Australia had the same experience with red clover. It would not grow enough seed to reproduce itself and the farmers were at their wits' end to know the reason until U. S. Department of Agriculture specialists told them that they needed bumble bees on the job. American bumble bees were therefore, trapped by the thousands and given a steady job in Australia; since that time Australian red clover seed business has been a great success.

It is the belief of Mr. Root that a part of the success of alfalfa in this country is due to the activity of honey bees. He thinks alfalfa in the Imperial and San Joaquin valleys would not grow half so well if the bees were not constantly at work.

Measured in Money

"It is pretty generally known," Mr. Root points out "that California heads the other States in honey production, something like $3,000,000 worth of marketable product being harvested here every twelve months, and yet I venture to say that, if we were to remove the honey bee from this, the greatest of all fruit-growing States, we would experience an immediate decline in production which would prove that bees are annually worth $100,000,000 to the fruit industry."

It takes a man of Mr. Root's caliber to show the farmer that he is killing his best friends when he exterminates a nest of bumble bees. They are worth nothing for honey production, but they accomplish for the red clover crops of this country what cannot be accomplished by any other agency. The honey bee is capable of fertilizing the blossoms of sweet clover, white clover and alfalfa.

Great Opportunities

Mr. Root points out the great possibilities which lie in honey production here in the southwest, where wild sage is so plentiful and mountain land unfitted for general agriculture is to be had so cheaply. He thinks the bee business in this State could well be tripled, and urges that bee keeping be taken up more generally by fruit growers for the sake of bigger and better fruit crops, if not for the sake of making money out of honey.

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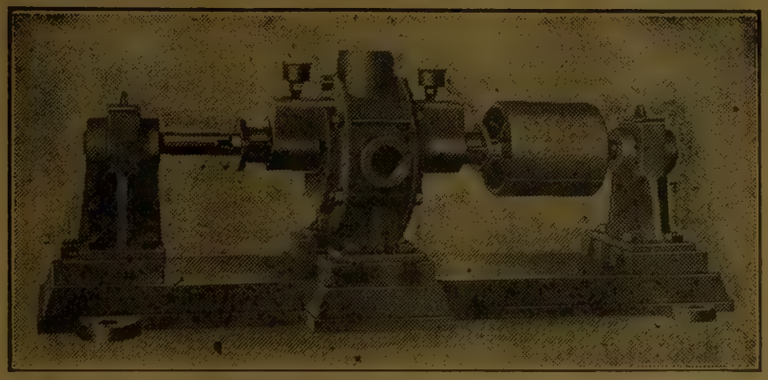

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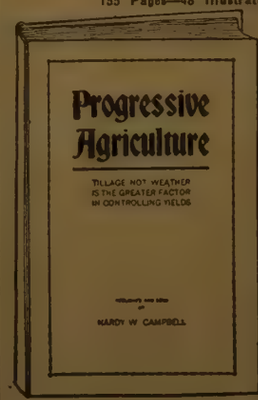

THIS book contains 19 chapters, each dealing with specific factors of vital importance in all crop-growing questions. The New Tillage idea clinches the certainty of successful farming, not only in dry seasons, but any and all years. Timely tillage will control yields in spite of droughty seasons.

This wonderful book is being offered including a three years' subscription to ORCHARD AND FARM, for one dollar and twenty-five cents. Mail your order today to the address below and the book will be mailed postpaid by return mail. This offer applies to both old and new subscribers.

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ORCHARD AND FARM, LOS ANGELES, CALIFORNIA.

ORCHARD and FARM

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On practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling what, when, where, why and how much.

RATES

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FARMERS CLASSIFIED MARKET PLACE

POULTRY

Why Spend More for Ordinary Chicks?

"Never saw chicks grow faster." "Your pullets lay through moult." Why? Some of the world's best layers and most productive flocks, and most prepotent males heading them. These birds, costing large sums, and are the strains that for 20 years have led in egg yield on three continents. Two-thirds booked on orders to June 1st; hundreds unfeathered; chicken [illegible] early week. Enhancing our daughters as dams [illegible] eggs capacity. Valuable circular with proof free. Breeders, pullets, eggs.
W. BEESON,
Pasadena, Calif.

Our Baby Chicks Lead

WHY?

Because they are properly hatched and handled and we can supply chicks
EVERY DAY.

—We guarantee a full count of live chicks at destination on lots of 25 or more.
—Poultry—all breeds. Send for Price List.

—EVERYTHING IN HAIR, FUR AND FEATHERS.
—FANCIERS' EXCHANGE.
646 So. Main Street. Los Angeles, Cal.

QUALITY Bred Chicks—Thoroughbred S. C. White Leghorns, bred to lay; not simply chicks, but stock that lays and pays. I hatch from my own yards exclusively—$500 to anyone that can prove otherwise. My ideal stone hatchery enables me to hatch perfect chicks during extreme temperatures; and all my chicks are shipped in the Dobbel Safety Boxes, which insure proper ventilation and safe delivery. Quality and satisfaction guaranteed. Send for my folder. F. W. Dobbel, Buena Vista Poultry Farm, Box 176-O, Sonoma, Calif.

BEST CHICKS I EVER BOUGHT." "Greatest layers we ever had." Why? Bred 20 years to lay 200-230 eggs yearly. Brown, White, Buff Leghorns; Barred, White Rocks; Reds, Anconas, Minorcas; Orpingtons; ducks, turkeys; clearing customers $5. Valuable circular with proof free. Chicks half hooked to June. Reasonable; 40,000-egg hatcheries, full now. Many repeat orders monthly yearly. Breeders. Pullets. W. Beeson, Pasadena, Cal.

SINGLE COMB RHODE ISLAND REDS. Some of California's best. Exhibition quality. Hoganized stock. Hatching eggs. $2.00 to $5.00 per setting. Send for catalogue. ALBERT SLY, 1642 Middleton Place, Los Angeles, Cal.

THOROUGH BARRED P. ROCKS. Egg record 1917 average 190 eggs per hen; 1918 210 eggs. Hatching eggs $2.50 per 15, chicks March and the following months 30c each. Warren Poultry Yds. Phone 5599. 36 Little Delmas ave., San Jose, Cal.

BABY chicks every week. Order early and get the date you want. White and Brown Leghorns, Rhode Island Reds, Barred Rocks, Anconas; also hatching eggs. Safe delivery guaranteed. Write for circular. Stubbe Poultry Ranch, Palo Alto.

SPRING CHIX—R. I. REDS, Barred Rocks, Buff Orpingtons, Black Minorcas, Brown, White and Buff Leghorns. Reasonable prices and pleased customers our aim. Tobener Hatchery, Route 2, Box 730, San Jose, Cal.

BABY CHIX. R. I. Reds my specialty. The best layers. Bred for eggs, color, size. Hens on free range. January deliveries 10c each, 12c to 1000 lots. Denton Poultry Farms, Box 300, Campbell, Calif.

S. C. RHODE ISLAND Red hatching eggs from our prize winning, heavy laying, Hoganized stock. Winners at Oakland, San Jose shows. Write for particulars. Wardle Poultry Farm, 39 So. Lincoln, San Jose, Cal.

BLUE ANDALUSIAN eggs from laying and winning strain. Better show record than ever. Write for circular. J. R. Huddleston, 342 Edgewater, Venice, Los Angeles, Cal.

WHITE WYANDOTTES EGGS FOR HATCHING from our heavy-laying prize-winning stock. BABY CHIX; COCKERELS. R. W. Stanciski, Route B, San Jose, Cal.

S. C. RHODE ISLAND REDS. Hatching eggs from heavy laying Thoroughbred stock. $1.75 per 15, $6 per 100. Free. F. Bruns, Route 1, Box 484, Berkeley, Calif.

"EASTMAN'S Bred-to-lay" Hoganized and trap-nested Barred Plymouth Rocks. BABY CHICKS, eggs, cockerels. Fairmead Poultry Farm, Fairmead, Cal.

BROWN'S Famous White Minorcas. Eggs from special matings. Yard No. 1, $3.00; Yard No. 2, $2.00. Chicks, $20.00 per 100—$90.00 per hundred. T. H. Brown, 256 Santa Ana, Cal.

S. C. WHITE LEGHORNS. Standard bred and fine producers. Eggs and chicks. Prices right. Arthur R. Scribner, Madera, Cal.

WHITE LEGHORN roosters for sale. Would exchange for White Leghorn pullets. Hoganized. Settings of eggs, $1.50. No. 27, Shawmut, Cal.

SANTA CRUZ HATCHERY—Established 1910. Chicks hatched from selected stock only. Eric Rosenquist, Santa Cruz, Calif.

HATCHING eggs. Pekin Ducks $1.50; Indian Runner Ducks, $1 per setting. Mrs. A. J. Lee, Route 1, Box 49, Lathrop, Calif.

BLACK Leghorns, Silver Campines of good quality. Hatching eggs, $2.00 per 15. Questions welcome. A. C. Hayes, Blaney ave., Cupertino, Calif.

BUFF ORPINGTONS, BUFF DUCKS, BOURBON RED TURKEYS. FREE mating list. THE FERRIS RANCH, Grand Ave., Pomona, Calif.

BABY CHICKS (White Leghorns)—Shipped on approval before remitting. No weak ones charged for. Schellville Hatchery, Schellville, Cal.

POULTRY

White and Brown Leghorn Chicks, guaranteed strong as 2 ounces, and bred for large egg production. Thoroughbred stock. Price $11.00 per 100, remainder by the 1000. Eggs $4.25 per setting. Stock for sale.

I use and sell Pioneer Incubators and Brooders. There are no better machines made. Prices reasonable. Write for particulars.

JAMES D. YATES,
Poultry Judge,
Modesto, Cal.

BROWN LEGHORNS.

The greatest EGG MACHINES and the HARDIEST of all. Also prize-winners at New York, Boston, Chicago, San Francisco, etc. Eggs from the finest matings in all America, $3 and $5 per 15; $15 per 100.

WILLIAMS BROS.,
FULLERTON, CALIFORNIA.

WELL, WELL—Here the White Plumage Poultry Farm and Hatchery is coming again, ready for another season. Our S. C. White Leghorn breeding stock is better than at any time during our 10 years of breeding. Therefore we can produce better and stronger baby chicks. Why not do your bit and feed the world? It is none too early to place your order with us today. We guarantee safe delivery. Price, $15 per 100, $70 per 500 and $130 per 1000. H. A. Schlotthauer, Exeter, Calif. Route A, Box 148.

FOR SALE—We guarantee full count of live chicks that will please you. We hatch from heavy layers selected by the Hogan system. Thoroughbred White Leghorns exclusively. Reasonable prices. Write for price list and book your order early. White Leghorn Hatchery Co., Pomona, Calif.

FREE BOOK. "CHICKENS FROM SHELL TO MARKET" on application. Coulson Company, Petaluma, Calif.

WEBSTER, WEBSTER & BLEWETT, Savings and Loan Bldg., Stockton, California. Established 50 years. Send for free book on patents.

FARM JOURNAL Clubbing Offer

Subscribers to Orchard and Farm who are engaged in farming or are interested in this subject, will be sure to fall for our new club of magazines. This club consists of Orchard and Farm, The California Poultry Journal, authoritive in its line, and The Woman's World, well-known ladies' magazine.

In order to secure this excellent combination, any Orchard and Farm subscriber, either new or old, needs only to make a payment of $1.00, if he desires Orchard and Farm for three years and the other two publications for one year each remit $1.50.

All letters with regard to this offer should be addressed to ORCHARD AND FARM, Examiner Building, Los Angeles, Cal.

TURKEYS

FOR SALE—TURKEYS. Giant Bronze turkeys. Gold Nugget strain. Prove their authenticity by winning Gold Special sweepstakes for the best turkeys at the following great shows: Los Angeles State Show, December 1916; Liberty Fair, Los Angeles, 1918; Pacific Coast Exposition, Oakland, 1918; California State Fair, 1917-1918; Los Angeles Show, 1917; Texas State Fair, 1917; Arizona State Fair, 1916. An unequaled record. Large turkeys can be raised at practically the same cost as small ones. TOMS AND HENS for sale that will increase size and improve any flock. J. Will Blackman, originator Gold Nugget Strain, 607 East Third Street, Los Angeles, California.

SEVERAL VARIETIES Turkeys. Mammoth Bronze, Bourbon Red, White Holland. Females $6.50, $7.00, $8.00. Males $12.00, $15.00. Bronze eggs, Blackman's famous Gold Nugget strain, 35c each. Reds and Hollands 50c. $5.00 dozen. White Guineas, either sex, $3.00 each. Eggs, 15, $2.00. White Muscovy (speckled) duck eggs, 12, $1.50. Hollan eggs 15, $2.00. All varieties from first prize stock. Large California shows including State Fair. Mrs. B. Hoeting, Guasti, Calif. Winner of many firsts and specials.

FOR SALE—Golden Bronze turkeys. Big bones; breeding toms of America's best strain. Eggs in season. M. M. Refman, Pleasant, Calif.

POULTRY REMEDIES

GAPE cure and White Diarrhea Cure, guaranteed cure or money refunded. By mail 25c each. Free literature. Agents make big money. Address National Gape Cure Co., Brandenburg, Ky.

BEES AND BEE SUPPLIES

WANTED—The address of some good Apiary and also the address of Bee Keepers' Supply Houses. I am figuring on buying about 50 stands of bees (Italian). J. H. Montgomery, Signal, Arizona.

COMMERCIAL PRINTING

1000 BUSINESS CARDS for $1; letterheads, envelopes, bills, wedding work, show cards, rubber stamps. ROBERT HILL, 2188 Sutter st., San Francisco.

ASSAYERS AND GOLD BUYERS

GOLD, amalgam, rich ore bought, cash; assaying, 60c. Pioneer Assaying Company, 636 Market street, opposite Palace Hotel, San Francisco, Cal.

PARCEL POST

CO-OPERATION (NOT OPERATED FOR PROFIT) reduces living expenses. Particulars and catalog from Co-Operative League, Commercial street, San Francisco.

RABBITS AND PIGEONS

NEW ZEALAND Reds, pedigreed and registered. A few choice ones at a very low price for quick sale:
One 14-month-old buck $10.00.
Two 13-month-old bucks $7.00.
One 13-month-old doe $10.00.
One 13-months-old buck 16 lbs. $12.50.
One 13-month-old doe, $1.50.
One 12-month-old buck, $6.00.
One 1-year-old buck, $8.50.
One 10-month-old buck $8.50.
One 10-month-old buck $1.00.
One 8-month-old doe $8.50.
Order direct from this ad. Certificate of registration free. Armstrong's Rabbit Yards, Petaluma, Cal.

FOR SALE—YOUNG NEW ZEALAND RED RABBITS from pedigreed and registered stock; also English and Himalayas for breeding. Rhoney's new book, Fur Farming, Farm Training, etc., beautifully illustrated, 50c. Rabbit remedies and supplies. "Roseole" Australian pelly plant. Annual. Seed 25c per package. MRS. C. A. RICHEY, 616 M. BONNIE-VAY, LOS ANGELES, CAL.

RAISE RABBITS FOR US—We have 117 raisers at the present time in this State; we want 500; we furnish you with original breeders and then buy back all that you can raise, paying $2.00 to $3.00 each for them. Our plan is thoroughly on the square. Write today, inclosing 25c for our book on rabbit culture, our 20 page catalogue and our raising proposition in full. The GILMORE RABBIT FARM, SANTA BARBARA, Cal.

NEW ZEALAND Reds. Pedigreed, registered sires and dams. Also heavy weight 4 mos. old utility does. Armistry shows many winners. 3, 5 and 7 months old. Also heavy weight 4 months old utility does. Extra fine. E. Kelly, 834 Main st., Petaluma, Cal.

NEW ZEALAND breeding does from prize winners $5.00. Four months $3.50. Breeding pen, four light Brahma hens and rooster, $10.00. Seven pullets and rooster, $14.00. Cecil S. Burns, Mountain View, Cal.

ARMSTRONG'S New Zealand Red Rabbits: improve your stock with a good healthy buck, pedigreed and registered. Prices right. ARMSTRONG'S RABBIT YARDS, Petaluma, Cal.

DR. B. HEARN, Veterinarian, breeder of New Zealand Red and Flemish Giant rabbits. R. R. 1, Porterville, Cal.

MONEY IN RABBITS—Raise rabbits for us. Will pay $6 per pair. Send stamp for reply. H. S. Gibson Co., Arcadia, Cal.

NEW ZEALAND, 8 dark red utility does, bred to pedigreed buck, $4 each. Eva Peppin, 86 Cambridge ave., San Leandro, Cal.

NEW ZEALAND REDS, pedigreed and utility fine stock. Write for prices. C. L. Reynolds, Scotia, Calif.

FLEMISH GIANTS, pedigreed. None better; also utility stock. Hotel De Bunny, 1578 W. 46th st., Los Angeles, Cal.

PEDIGREED Himalayan does from State champion, $7.50 (bred before delivery). Also New Zealands. Kenneth Hardy, Locust ave., San Bernardino, Cal.

RABBITS—New Zealand Red breeding stock. R. C. Specht, Route A, Sonoma, Cal.

FOR SALE—Rabbits: New Zealand and Flemish Giant. Paul Kruger, Watsonville, California.

MISCELLANEOUS—FOR SALE

New Model No. 15-K

Do You Iron Today? If so, keep cool. Use the Imperial self-heating Iron. Makes its own gas generated from kerosene. The cheapest and best iron made. Cole Lite & Sales Co., Lamp Dept., Left to 1220 E. 41st st., Los Angeles, Cal. Demonstration room, 234 S. Hill st.

I WILL deliver by express one box lemons containing 45 to 48 for $3.00. One box oranges containing 24 to 36 for $1.75. One 50-lb. sack walnuts for $2.50; one 5-lb. sack almonds for $3.00; one 10-lb. sack beans, lima, pinks or navy for $1.50; one box apples for $1.00 if parcel post, 3rd zone or over, add 35c. Ernest Vince, Santa Barbara, Cal.

A LEVIN successor to Kelly Machinery Co. All kinds and sizes of Pipe, Engines, Boilers, Pulleys, Shafting, etc. Good second-hand Wire Rope, Manila Rope and Barb Wire. 524 Mission Road, Los Angeles.

PRINTED BUTTER WRAPPERS—100, 90c. Additional, 40c 100. Postpaid. Northwest Bond Printing Co., Portland, Ore.

TOBACCO stems for sale. $1 a bale. Max Roth, Cigar Co., 445 S. Los Angeles, Los Angeles, Calif.

MISCELLANEOUS—Wanted

WANTED—Homes for James, aged 8, medium complexion, quiet, attractive; Harold, 10, blond, musical; Emil, 11, healthy, handsome, intelligent; Irving, 11, the Ad. Club magazine for boys, honorable, nice looking, brilliant. Apply Children's Home Society, 2416 Griffith ave., Los Angeles, Cal.

PATENT ATTORNEYS

HAZARD & MILLER, ATTORNEYS AT LAW—Patents and Patent Courses. Henry T. Hazard established the agency in 1879, which has been uninterruptedly in business since that time. Herman Miller eight years examiner in U. S. Patent Office. Our library contains the record of every U. S. patent. Examination without charge. HAZARD'S 1918 BOOK ON PATENTS FREE. 509-510 Central Building, Sixth and Main streets, Los Angeles.

SEND FOR FREE BOOKLET "All About Patents and Their Cost." Shepherd A. Campbell, Patent Attorney, 734K 8th st., Washington, D. C.

SAFETY RAZOR BLADES

SAFETY RAZOR BLADES re-edged, 30 cents dozen. Howard's, Box 93, Los Gatos, Calif.

POULTRY

BABY chicks for sale—100,000 S. C. White Leghorn chicks from heaviest laying (Hoganized) stock for delivery every month in the year, at very reasonable prices. Safe delivery of all chicks guaranteed. Shipped safely anywhere west of the Rockies. No money in advance; pay on delivery. Finest hatchery in the world. Established 1898. Further information write
MUST HATCH INCUBATOR COMPANY,
432 Seventh St., Petaluma, Calif.

FOR SALE—Take advantage of this special offer of a year's subscription to the California Poultry Journal, the leader in California, or a one year's subscription to the Northwest Poultry Journal, the leader in the Northwest, including one year's (new or renewal) subscription to Orchard and Farm for only seventy-five cents, or both poultry journals for one year and Orchard and Farm one year for one dollar. Mail your order today to Orchard and Farm, Los Angeles, Cal.

STRONG, vigorous baby chicks from Hoganized stocks, or hatching eggs from same select breeders. These birds are the result of years of culling out for higher egg production, with high-type males brought in when needed to perpetuate fine egg ability. Hundreds of well pleased customers can affirm above statement. Write for prices to JOHN C. BARE, Hoganized Ranch, San Jacinto, Cal.

"EGGS. White Leghorns from 230 to 280-egg hens, bred to pockets of the 250-300-egg type. Bred for 16 years for more laying than standard requirements. Trapnested and Hoganized. Mediterranean and Barron strain. Eggs, $1.50 a setting; $7 per 100. Chicks, $15 per 100. A. Wood, R. F. D. 3, Napa, Calif.

FINEST HATCHERY IN THE WORLD—Baby chicks, Rhode Island Reds and White Leghorns settings, 100, 1000 hatched right in our 800,000 egg and concrete hatchery from our quality heavy layers; reasonable prices; stock hatching eggs. Pebbledale Poultry Farm, Sebastopol, Cal.

QUALITY CHICKS—TRUE-TO-NAME PRIZE WINNERS. White, Brown, Buff Leghorns, Black Minorcas, Rhode Island Reds, Barred and White Rocks. Circular on request.

HOGANIZED COCKERELS FOR SALE. The Moscow Hatchery, Box 7, Campbell, Calif.

HEALTHY WHITE LEGHORN chicks or eggs from strong, vigorous, easily fattened, Caesar-old hens, tested to Hogan schedule. Eggs, $6 per 100. Prices reduced. $17 per 100, March and April. $15 per 100. Wheeler Poultry Ranch, Monrovia, R. F. D. 1, Box 7-D.

BABY CHICKS AND EGGS. Hoganized White Leghorns, strictly Rhode Island Reds and Barred Plymouth Rocks; our specialty, also choice Anconas and Blue Andalusians, from regular Mediterranean Poultry Ranch, Route 1, Box 246, San Jose, California.

SILVER Wyandottes, Reds, Oregon Agricultural College Barred Rocks; 15 eggs $3. Rhodes Pheasant eggs $3.50 dozen. Ornamental Pheasants $5 dozen. Simpson's Pheasant Farm, Corvallis, Oregon.

MAKE capons of your cockerels and double your profit. Heavy breeds make 12-lb. capons 5 weeks in good age. Caponizing 25c each. Instruments $4.50. Free circular. Mrs. H. Ament, Capon Specialist, 1st. 422 Kerckhoff Bldg., 6th and Main, Los Angeles.

BARRED PLYMOUTH ROCKS—Champion prize winners and wonderful layers. Stock for sale—nothing better in poultry than Vollmer's Rocks. Catalog free. Vollmer's Rookery, Los Gatos, Cal.

HOLLISTER HATCHERY. Baby chicks of quality from selected stock. White Leghorns or Black Minorcas. Prices and terms on application. Box 683, Hollister, Cal. E. W. Kelly.

CHIX—Barred and White Rocks, Reds, Orpingtons, Anconas, Minorcas; Buff, White and Brown Leghorns, breeding cockerels. Enoch Crews, Seabright, Calif.

EGGS for hatching from prize-winning, heavy-laying Golden Buff Leghorns. W. L. Bartholomew, Chico, Calif.

IF YOU WANT EGGS, get Andalusians. Hatching eggs for sale. Dan M. Calbreath, Monmouth, Ore.

Thoroughbred Buff Orpington eggs from heavy-laying stock; settings, $1.50. Mrs. M. Lopez, Lathrop, Calif.

FARMERS CLASSIFIED MARKET PLACE

FARMS FOR SALE

FINE Tree Poultry Farm, on highway between Los Gatos and Saratoga, for sale on account of death of owner; 12 acres on Interurban electric line; 1335 laying hens; hatching eggs contracted for season; alfalfa land piped for irrigation from all-year creek; 900 prune trees; beautiful shade trees; high class neighborhood. E. W. Putnam, 519 California st., San Francisco. Kearny 617.

FOR SALE or rent, 3000 acres of good level land in Fish Lake Valley, Mono County, California. Good for alfalfa, grain, beets, potatoes, onions, cattle, hogs, goats or bees. Part for sale at $10 to $25 per acre; for rent at your own terms; in tracts of 160 acres and up. Address The Varnell Shoe Co., Watsonville, Cal.

FOR SALE—Game Farm. Two Hundred and Sixty acres; 28 head of Deer. New House, water piped to house. Produced Twenty-five Hundred Dollars worth of Crops last year. About 70 acres in cultivation. A beautiful home. Price $60.00 per acre. Owner, G. D. Gorus, Purdue, Oregon. Douglas county.

ALMOND ORCHARD FOR SALE—40 acres in 10, 20 or 30-acre tracts. 1½ miles from Arbuckle, coming 5 years old; will have crop this year. Terms. Also 40 acres sown to barley, 1½ miles from Arbuckle. Terms. And in tracts to suit. Inquire B. L. Doherty, R. F. D. Box 50, Arbuckle, Cal.

HAVE a fine dairy and hog ranch. Irrigation, also two deep wells; 67 acres alfalfa and wheat; good house, separator, hay barns, new Case tractor, tractor plow. Cost $21,000. Will sell for $16,500. Address owner. Might take terms. Marnie, Thalheim, Stanislaus County, California.

FOR SALE—600 acres good level land in Klamath county, Oregon, unimproved, fenced on three sides, good for alfalfa, grain or cattle. Price $10.00 per acre. Address W. H. Johnson, 22 Maple avenue, Watsonville, Calif.

40 ACRES, good improvements; good soil, water and grass; fine for berries, vegetables, hogs and cows. H. Koenig, Fort Bragg, Calif.

FARM LANDS, HOMESTEADS

MEXICO. WAR BEING OVER, FAR SEEING MEN ARE LOOKING TO MEXICO. They predict Mexico's future will be determined at the Peace Conference at Versailles, and that one of the greatest land booms in history will take place in Mexico. You can secure lands at the right price now and we will contract to farm them for you on shares which will net you approximately $325 per year on an investment of $500, which is secured by a deed to land improved and in crop. Terms can be arranged. HOW CAN WE DO THIS? Cheap land; cheap labor; right on the Southern Pacific Transcontinental. Ideal climate and high market prices for our products. WE ARE THOROUGHLY EQUIPPED WITH MODERN TRACTORS AND MACHINERY TO DO THE WORK. REMEMBER, YOU GET RETURNS THE FIRST YEAR. If you prefer to buy land in larger tracts and do your own farming, we can arrange price and terms to suit. We also have large tracts of grazing land. TWENTY YEARS IN BUSINESS IN MEXICO. DO YOUR THINKING NOW. LET ME HEAR FROM YOU. A. M. CONARD, 707 I. N. VAN NUYS BUILDING, LOS ANGELES, CALIFORNIA.

FLORIDA FARMS FOR SALE

42-Acre Florida Farm, $2000

WITH STOCK AND TOOLS.

Successful owner wants larger farm and for quick sale throws in horse, heifer, calf, sows, wagons, plows, harrows, tools; mile railroad depot, church, etc.; 3 miles city; productive loamy tillage, wire fenced pasture, wood; fruited, numerous plums, oranges, grapefruit, grapes and dewberries. Good 5-room cottage, veranda, 2 barns, wagon house, smoke, milk, meat and poultry houses; $2000, easy terms, gets all. Details page 14, Strout's Mid-Winter Catalogue, bargains 17 States. Copy free. Dept. 781. E. A. STROUT FARM AGENCY, Heard Bldg., Jacksonville, Fla.

FRUIT RANCHES FOR SALE

FOR SALE—$10,000 Ideal California foothill fruit ranch, 15 29-100 acres. Located in finest orange and olive belt in California—no frost. Five acres Washington navel oranges, BEARING; 10 acres Mission olives; also peaches, apples, apricots, cherries, figs, English walnuts, lemons, grape fruit, avocadoes, blackberries, raspberries and grapes. ALL BEARING. Plenty of water. Home with all modern improvements. Fine school adjoining ranch. Owner compelled to sell owing to other business. George J. Hale, Chancellor Hotel, San Francisco, Cal.

FOR SALE—
20 acres, 2-year-old Almond Orchard. This property taken in on an exchange and present owner is selling at a sacrifice. Price, $165.00 per acre. Terms can be had.
NELSON REALTY COMPANY
Pioneer Dealers in Almond Land,
ARBUCKLE CALIF.
THE HOME OF THE ALMOND.

FARM of 70 acres, 30 fenced, 300 bearing apple trees; free water; free cattle range, on R. F. D. route, 2 miles from school. $1500. Mrs. C. A. Barry, Mokelumne Hill, Cal.

REAL ESTATE

WHAT do you know about Orland? Best soil, best water, best location, best bargain, best terms; 10-20-40 acres. Alfalfa, Almonds, Olives. Avoid the sharks. Address the owner, Hall T. Brown, Orland, Calif.

BARGAINS—BARGAINS. Send for free magazine of farms, businesses, wild land, exchanges, any kind, anywhere. Western Sales Agency, Minneapolis, Minn.

WANTED—To hear from owner of good farm for sale; state cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FARMS WANTED

WANTED—TO hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

WANTED—TO hear from owner of good farm for sale. State cash price, full description. D. F. Bush, Minneapolis, Minn.

FIELD SEEDS, GARDEN STOCK

GIANT MARROW CABBAGE'S official Pacific Coast yield record was EIGHTY EDIBLE TONS PER ACRE. Earlier, hardier and richer than kale, surpassing it in every way. Greedily eaten by all stock from "day-old" chix to rabbits, hogs, horses; while rapidly growing trunk tips make ideal table "greens." Imagine leaves TWENTY INCHES wide, or FORTY LONG—STRETCHING UP SEVEN FEET SEVENTY DAYS FROM TRANSPLANTING! Never "heads," but its huge marrow-filled trunk is its richest part—instead of being "woody," "stringy" waste, as with kales. Only GUARANTEED pedigreed seed supply to my knowledge. 500 seeds, 25c; five such packets $1.00; full acre supply $3.00; insured mail. Photos cultural suggestions FREE. Plants again!

"GOLDEN POTLACH," or "Big Dinner" Bush Pea, the variety that Eastern market gardeners are "going wild over," the largest, SWEET-est, greenest, tenderest wrinkled pea grown. Some roots "wintered over" in open ground near Canada line, bearing third crop in May, 1918. Well soaked and cooked, RIPE SEEDS palatable as "canned." Packets 15c, eight for $1.00.

RAREST BEANS for coast planting; better pole variety than "Kentucky Wonder," or money back. Packets 15c.

TWO PROLIFIC, PRACTICAL POTATO NOVELTIES—"different," delighting. "Purple Perfection" is super-early, ordinarily frost-proof and DEMANDS CONSTANT GROWTH — bears several tubers on same underground trunking stem. California customer reports SECOND CROP (1918) in swift succession, from one small sample sent in letter saying: "Best potato I ever saw in California." Solid dark purple skin, white-fleshed, fine flavor. Also "Purple Special" (Japanese) fancy salad variety, both skin and flesh generally purple through and through—simply "stunning" for salads, medium-sized. Small sample, either variety, 10c; pound, 40c; 3 pounds, insured mail, $1. LIMITED SUPPLIES of all above novelties. ORDER TODAY. E. E. Martin, the GUARANTEEING Seed Specialist, R-4, Charleston, Washington.

LEGUME BACTERIA. Don't Risk Failure! Inoculate Vetch, Alfalfa and all Clovers. Cultures $1.50 each, postpaid (enough for 50 pounds of seed). We are Coast distributors of products of reliable Eastern laboratory. Seeds, too, and seed grains.
RALPH WALDO ELDEN,
Medford, Oregon.

FENTON'S Hybridized Dahlia Seed—The world's best. The only dahlia farm in the world that makes a specialty of Hybridized Dahlia Seed. 35 seeds, 50c; 85 seeds, $1; by return mail. Fenton's Dahlia Farm, 771 Buena Vista ave., S. F., Cal.

BLASTO Dynamite associated with Fertilizers. Be progressive and adopt a policy of anticipation in regard to fertilizers. Improve orchard yield through sap nutrition and in the direct feeding of the roots. A. J. Atkins, Medford, Oregon.

HARDY Hybrid Alfalfa. Wonderful Grower. Getting finer and better with age. Permanent. Quality guaranteed. Write for proof. J. L. Lawson, San Jose, Calif.

4 CHOICE Cactus dahlia bulbs, all different, 50c; $1.25 a dozen. J. Peppin, 86 Cambridge ave., San Leandro, Cal.

SOME genuine cantaloupe seed wanted. Mrs. G. N. Jack, Los Molinos, Calif.

NURSERY TREES AND PLANTS

TREES—Trees for sale. Fruit trees of all kinds. Also 10,000 Placentia and Eureka Walnut trees. These trees are first class grafted and budded stock. Order now. The Third and Bush Street Nursery Co., Santa Ana, Calif. Phone 938W. R. E. Franke, prop. Res. phone 769R.

TREES, TREES—Placentia and Eureka walnuts on black. A general line of high grade nursery stock. A. R. Marshall's Nurseries, 1212 Ross st., Santa Ana, Cal.

PLANTS AND BULBS

POSITIVELY thornless Mammoth Blackberry; hardy, prolific, ripens early; berries mammoth, practically seedless. Have distinct wild flavor, sweet, needs little sugar. Sound to core—all other blackberries as it has size and quality, minus thorns and seeds. We now have two acres producing fruit. Well rooted plants direct from Mammoth Pass Ranch, where the original vine was found, ½ doz., $1.50; 1 doz., $2.50, postpaid. G. S. Witt, Box 125, Jamestown, Cal.

FOR SALE—Burbank spineless cactus, Monterey and other forage varieties, 15c per slab, $12.50 per hundred. Booking orders for spring delivery. B. W. Mitchell, Paskenta, Calif.

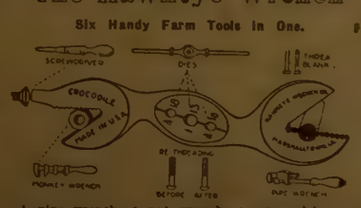
BURBANK'S THORNLESS BLACKBERRY plants, 25c each. Tips, 5 for $1.00, postpaid. W. H. Glas, Modena, Calif.

REAL ESTATE FOR EXCHANGE

WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

The Hawkeye Wrench

Six Handy Farm Tools in One.



A pipe wrench, a nut wrench, a screw driver and three dies for cleaning up or re-threading rusted and battered threads. Dies fit all standard bolts used on standard farm machinery. Requires no adjustments; never slips; simple and always ready for use. Will work in closer quarters than any other wrench; has handsome blued finish. Every farmer should have one of these wrenches in his tool kit. Can be used in more ways than any wrench made.

This valuable wrench sent postpaid to any address free with a twelve months' subscription to Orchard and Farm at 50c.

Mail your order to ORCHARD AND FARM, Examiner Bldg., Los Angeles, Cal.

LIVESTOCK—Sheep, Milch Goats

KARAKUL DESERT SHEEP

Do you wish to raise PERSIAN LAMB and ASTRACHAN FUR and make twice as much money as you do when raising sheep for wool and mutton only?

THE KARAKUL is much hardier than even the goat, besides producing the finest mutton and wool in the world.

For information, address

THE EDITOR OF ORCHARD AND FARM,
EXAMINER BLDG.,
LOS ANGELES, CALIFORNIA.

D. E. KELLIHER—Importer and breeder of Hampshire sheep, Eugene, California, offers for sale a choice lot of yearling Hampshire rams sired by Walnut Hall and Butterfield rams purchased at Salt Lake August, 1916. Inspection and correspondence invited.

LIVESTOCK—Chester Whites

THE BILLIKEN HERD OF CHESTER WHITES. NOTHING TO OFFER AT PRESENT. Herd boars are "Billiken," grand champion the 1917 State fair. Conceded by experts to be the best Chester boar that ever came to California. "Wildwood Boy" of Wildwood Prince—Wonder blood lines, pronounced to be the largest and heaviest Chester boar in the State. "Bonnie Model," sired by a Commonwealth Elmo boar and out of the 1916 State Grand Champion sow. The sows are all big, smooth and stretchy, with plenty of bone and lots of quality. Have recently added some bred sows of the extreme large type so popular in the East at present. Sows are bred for March and early April farrows and I will book a limited number of orders for these coming pigs, delivery to be made when weaned. C. B. Cunningham, Mills, Sacramento county, Cal.

LIVESTOCK

NOTICE TO STOCK OWNERS
USE "Forcine" to build up a run-down animal. Thousands of satisfied customers. Guaranteed or money refunded. $1.25 prepaid; circular on request. Charles Tener, Box 434, Poughkeepsie, N. Y.

"RAISING Calves Without Milk." Send for free booklet telling how to do it. Comson Company, Petaluma, Calif.

LIVESTOCK—Duroc Jerseys

BOUDIER DUROCS all sold out, excepting some choice September gilts, breeding and satisfaction guaranteed. H. E. Boudier, Big Ranch Road, Napa, Cal.

LIVESTOCK—Berkshires

FOR REAL GOOD BERSHIRES write Frank B. Anderson, Box 724, Sacramento, Cal.

AGENTS, SALESMEN—Wanted

AGENTS FOR THE INCOME TAX BOOKKEEPER. Government requirements and extensive newspaper publicity create demand; something entirely new; so simple a child can keep it; every farmer, merchant and professional man buys one book, which retails at $3.50; practically a self-seller; makes a friend and booster of every buyer; big profits to agents, $15 to $30 per day, sample copy to agents on receipt of $2, with privilege of returning. Address THE INCOME TAX BOOKKEEPER, 321-323 Monadnock Bldg., San Francisco, Cal.

AGENTS—Mason sold 18 sprayers and auto washers one Saturday; profits $2.50 each; square deal; particulars free. RUSLER COMPANY, Johnstown, Ohio.

WANTED—1000 poultry men to try the new Perfection automatic poultry fountain; none better; free circular. John Buschmeier, Inglewood, Cal.

HELP WANTED

WANTED—Experienced Farmer and Rancher to work as Manager of Orange Ranch in Nevada. Should know irrigation practical. Address Rancher, care Orchard and Farm.

FARM PARTNER WANTED

WOMAN farmer wants another, shares, cultivating flowers, fine vegetables, etc.; good home, automobile. Must be healthy and practical. Address Marnie, Thalheim, Stanislaus County, Calif.

SITUATIONS WANTED

WANTED—By married man, position as superintendent or foreman on ranch; thoroughly experienced in laying out and planting orchards, growing fruit, general farming, alfalfa growing and irrigation. Answer P. O. Box 251, Ripon, Calif.

BUSINESS OPPORTUNITIES.

WANTED—Man with rig or auto, sell Rawleigh's Products. Established demand. Large profits. Healthy. Pleasant. Permanent. Give age, occupation, references. W. T. Rawleigh Co., Oakland, Calif.

BOOKS—HEALTH and MEDICAL

SPIRITISM—WHENCE? Biblical secret, facts; 100 pages. 10c. Greig, People's Bookman, Parker, S. Dak.

SECOND-HAND GOODS

NOAH'S ARK. EVERYTHING SECOND HAND; all kinds stoves, plumbing supplies, machinery, tools a specialty. 609 E. 1st st. Phone 19750.

AGRICULTURAL IMPLEMENTS

IMPLEMENTS AND RANCH SUPPLIES. SAMPLES and slightly used. Four floors. Large stock. Liberal credit. Save 50 per cent on some. No branches.
ARNOTT & COMPANY, INC.,
The Yellow Front. Established 1892.
112-118 South Los Angeles St.
Los Angeles, Cal.

WANTED—Second-hand, in good order, a one-man stump puller and a 300-gallon rotary pump. A. Leforge, R. D. Box 66, Newcastle, Cal.

TRANSFORMERS—Only transformer factory on Coast building complete line of transformers for all purposes. Gardner Transformers sold under positive guarantee as to serviceability. Deliveries unequaled. Special attention paid to farm and irrigation orders. GARDNER ELECTRIC MFG. CO., EMERYVILLE, CAL.

IDEAL HOIST FOR UNLOADING HAY, driving fence posts, stretching fences, erecting buildings, clearing land, road, buildings and numerous other purposes. Inexpensive; great labor saver. Send for circular. U. S. Iron Works, Seattle, Wash.

AUTO TRAILERS

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FORDS START EASY IN COLD WEATHER with our new 1919 carburetors; 34 miles per gallon; use cheapest gasoline, distillate or half kerosene; increased power, styles for any motor; very slow on high. Attach it yourself, sole profits to agents. Money back guarantee; 30 days' trial. Air-Friction Carburetor Co., 325 Madison, Dayton, Ohio.

ENGINES

SEVERAL NEW AND SLIGHTLY USED ENGINES. ARNOTT & CO., Implements, 112 South Los Angeles st., Los Angeles.

HIDES, FURS, PELTS.

FUR FARMING—Modern, scientific, intensive. The new magazine, "AMERICAN FUR FARMER," sample, 10c. Reliable, up to date books, literature, list free. Original booklet on fur farming business system, "The Number System," 10c. Fur farming supplies, all kinds, list free. Printed forms, breed and stock records, system cards, ear tags, etc., samples, 10c. Excellent printing; get our prices; samples, 10c. Fur bearing animal breeding stock supplied; circular free. Money refunded if dissatisfied. Address Dept. "D," American Fur Farmer, Box 492, Oakland, Calif.

MEDICAL

THE FAMILY BOOKLET—A treatise on the cause of our diseases; how to foresee and prevent them. This is a scientific and interesting volume in condensed form and will be of great help to the sick as well as to the healthy.

Write now for a free copy to A. A. Guglieri, M. D., Postoffice box 1299, Madrone, Calif.

CANCER CURE—Lump, sore or wart may be cancer; warning; cancers, wens and breast lumps cured; no knife used. Ask those we have cured. Cancer book on request. Shirley treatment, 253 Twelfth, Oakland, Calif. Examination free. Charles Shirley, M. D., Authorized Physician.

LUMBER—Building Material

"LUMBER, SHINGLES, POSTS sold direct. Karlot Lumber Company, Tacoma, Wash."

FOR SALE—Walnut grafting wood, selected Franquette, Mayette, Payette and Frame; 5 cents foot. Bowman-Kuhn Ranch, San Jose, Cal.

Practical Farming

This attractive volume is a veritable encyclopedia on a subject embracing the entire sphere of farming. It offers a collection of money-saving methods in agriculture, treated by specialists who have devoted a life of thought, study, experiment and practical experience to the special subjects they deal with. It is written in a style from which any farmer can understand, and the volume will form a priceless guide for every-day reference.

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The book will be mailed postpaid, including one year's subscription (new or renewal), for $1.00, or three years at $1.50. If after receiving Practical Farming and Gardening, you find it not just as advertised and you are not thoroughly convinced it is a wonderful bargain, return it at our expense and we will cheerfully refund your money.

Address ORCHARD AND FARM,
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Get Your *Irrigated* Farm From the Canadian Pacific

IN a climate not excelled by any agricultural area in America you can own a fine, rich farm of your own. The Canadian Pacific Railway offers you this opportunity to achieve independence and grow rich—in Western Canada. The lands offered are in the largest and most substantial irrigation undertaking in the Continent. The price is only $50 an acre—some for less.

Twenty Years to Pay
You pay down 10% and have 20 years in which to pay the remainder. The first crop is often worth more than the total cost of the lands.

$2,000 Loaned to Farmer
Loans of $2,000 in improvements are made to approved settlers on irrigated farms with no security except the land itself. You can take 20 years to repay this loan at 6% interest.

Irrigation, Crop Insurance
This land is not arid but production can be greatly increased by irrigation. There is an unfailing supply of water which is administered under the direction of the Canadian Government. The provinces have no control over it and there is no conflict of law or authority over its use. The water is free, the only charge being a fee of from 50c to $1.25 per acre for the maintenance of the system and the delivery of the water. Irrigation here is *not* an experiment.

Why an *Irrigated* Farm?
Because irrigation in Southern Alberta
—insures crops every year
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—produces great quantities of coarse grains, pasture, alfalfa, roots, thus developing the live stock industry which is safer and ultimately more profitable than wheat farming
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The Opportunity for You
The Canadian Pacific Railway knows that its prosperity depends on the prosperity of the settlers along its lines. Because it wants good settlers it is willing to sell its lands at these remarkable prices and terms.

Send for special railway rates and special booklet fully describing all lands and giving all details.

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Supt. of Colonization
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☐ Farm opportunities in Alberta, Saskatchewan and Manitoba.
☐ Special railway rates for home seekers.
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Address _____
Town _____ State _____

A VALUABLE BOOK

EDITED BY
WILLIS MACGERALD
BY AN EMINENT
ARRAY OF SPECIALISTS.

For Progressive Farmers Making the Farm Pay

Money-Saving and Money-Making Methods

Throughout the text of this great book the reader is given the results of scientific research, coupled with successful experience, by use of only such expressions as can be readily understood by those who have not had a scientific training. Thus any farmer with ambition to make the most of his labor and realize the greatest returns for his investment will find in this volume a priceless guide for everyday reference.

This work has been divided into departments, each covering subjects of vital importance, and each prepared by a specialist in his line, who has devoted his life of thought, study, experiment and practical experience to his special subject. The list of authors whose names are familiar, to wide-awake farmers will be found on accompanying cut of book in connection with the subjects covered by each.

One Practical Idea Taken From This Book Worth Many Times the Cost of Entire Volume

It is needless to say that the advantages to be gained from a single practical idea, taken from any of these departments and put into practice, is worth many times the small expense incurred adopting the more approved methods.

This volume consists of over 500 pages handsomely bound in cloth, size 8½ inches long, 6½ inches wide, richly illustrated on good book paper. 200 fine drawings and half tones with feeding chart in colors.

The book will be mailed postpaid, including three years' subscription (new or renewal) to Orchard and Farm, for $1.50. If after receiving Practical Farming you find it is not just as advertised, and you are not thoroughly convinced it is a wonderful bargain, return it at our expense and we will cheerfully refund your money.

Mail your order to Orchard and Farm, Los Angeles, Cal.

Marketing Farm Produce by Mail

How to Obtain and Hold City Trade

THERE is reason to believe that California food producers are not taking advantage to the greatest possible extent of the possibilities afforded by direct dealing. The city housewife is always on the lookout for fresh, guaranteed products delivered from the point of production, and nearly all classes of produce have been successfully marketed by mail.

The Bureau of Markets of the United States Department of Agriculture has conducted some interesting investigations of methods and results in direct parcel post selling. The farmer who proposes to establish such trade will naturally ask first, "How shall I obtain customers?" In a number of cities in which investigations were made it was learned that fully 75 per cent of the produce is sent by persons who found their market through friends, relatives or acquaintances in the cities, these original customers recommending the produce to others, and so on until a large clientele was built up. In most cases, the producers had merely solicited trade originally by letter from a few friends, with the result that the business expanded rapidly without further solicitation.

This method of establishing business relationship is especially recommended for the general farmer who has a limited amount of produce. Those who wish to market a great deal of produce may find it necessary to obtain customers by personally soliciting strangers or through advertising in newspapers.

Use Circulars Carefully

Form letters, circulars, or cards sent to a selected list of persons have been suggested often as means of obtaining customers for produce by parcel post. The cost of obtaining customers by circularizing is frequently great, and unless the names of persons to whom the circulars are sent are selected very carefully this method of obtaining customers can not be especially recommended.

Customers may be obtained by making a personal canvass in a selected neighborhood in a city. The neighborhood should be one which is not supplied with a great many markets or green grocery stores in order that the competition may not be as keen as it would be in a neighborhood that has excellent marketing facilities. A suburban district of homes with good incomes offers a good field in which to solicit trade. In many such districts the delivery service of the groceries is not as satisfactory as in the city.

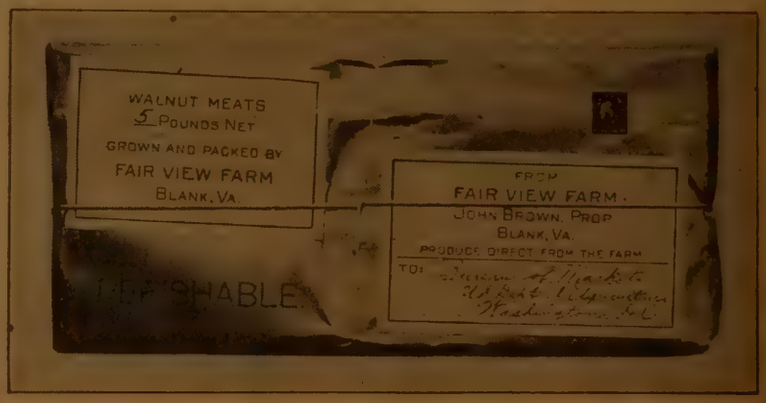
If the producer's farm is on or near a much-traveled road an attractive farm bulletin board placed conspicuously near the road is a help to both producer and consumer in making business contact. California farmers have better opportunities for this kind of advertising, perhaps, than those in any other State, because of the extensive travel on the highways.

Warning notices might be placed at a proper distance in each direction from the main bulletin board. The wording on these warning boards should be brief but pointed, such, for example, as "Fair View Farm. Read Marketing Bulletin Ahead."

Stationery a Help

If a farmer expects to develop a business of selling produce to strangers he will find it advisable to have printed stationery bearing the name of the farm, with envelopes to match. If the farm is not named, an appropriate name should be selected. A simple, though attractive and businesslike letterhead can be printed without much cost. It should give the name and location of the farm, the farmer's name, and a simple statement of the business. Elaborate and highly colored letterheads embellished with illustrations of buildings, fruits, or animals should be avoided.

Blank statement forms or invoices to fill in and inclose with shipments should be supplied. Persons receiving produce by mail wish to know the price of the shipment, and by the use of printed statement forms the shipper can furnish this information without much trouble.



A Neat Parcel-Post Package

Of the type used in experiments conducted by the Bureau of Markets, United States Department of Agriculture.

Business Relations

Once contact has been made and shipping begun it is important that proper business relations be established and maintained, for on these depend success. The difficulty frequently met with in obtaining the first order makes it important for the producer to use businesslike methods to retain the trade that he secures.

Whether the producer is successful in parcel post marketing depends largely on his adaptability to this work. If routine and detailed work is distasteful to him he may never learn how to keep up a business relationship. Thousands of persons who have been successful in obtaining customers have been unsuccessful in keeping them.

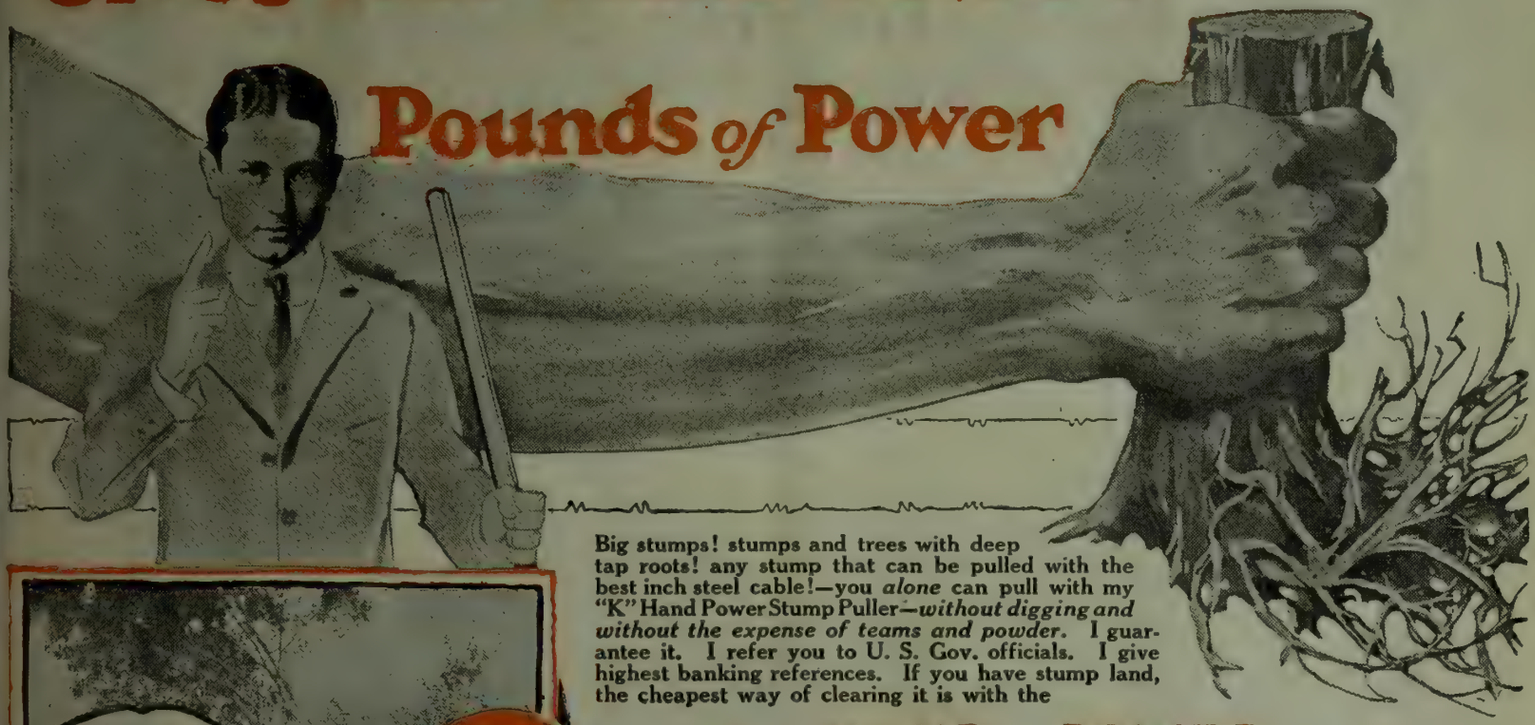
The most important feature in a business relationship is a square deal. Good grading of produce, strict business honesty, prompt attention to correspondence and orders, and satisfactory adjustment of complaints are needed.

Each parcel must bear the name and address of the shipper, the name and address of the person for whom intended, and the nature of the contents, such as "Fragile" or "Perishable." As tags frequently are torn off, it is best to have this information written or stamped directly on the outer wrapper or container. If the only mark of identity of producer and consumer is on a tag and the tag is lost, the parcel can neither be delivered nor returned to the sender.

My K Hand Stump Puller

Gives Your Hand 96,000

Pounds of Power



Big stumps! stumps and trees with deep tap roots! any stump that can be pulled with the best inch steel cable!—you *alone* can pull with my "K" Hand Power Stump Puller—*without digging and without the expense of teams and powder.* I guarantee it. I refer you to U. S. Gov. officials. I give highest banking references. If you have stump land, the cheapest way of clearing it is with the

HAND POWER

Stump Puller

Frank Hance, a *one-armed* farmer of Bowie, Md., pulling a double silver maple 3 ft. 8 in. in diameter at the ground, with deep tap roots. This is an easy pull for the "K," as the cable can be hitched high and the leverage is consequently greater.

How the "K" Pulls Biggest Stumps

The "K" works on the leverage principle of the ordinary lifting jack, except that the power is applied on a cog-wheel instead of a standard. 100 lbs. push on the lever develops a 48-ton pull on the stump—all an inch steel cable will hold. One man operates it alone—no teams to pay for—no walking.

A Mechanical Wonder

Made of finest steel—guaranteed against breakage. Weighs only 171 lbs.—easily carried or hauled about on its own truck wheels. Has two speeds—60 feet per minute for hauling in cable or for small stumps—slow speed for heavy pulls. *Works equally well on hillsides and marshes where horses can not* work

Owners Praise It

H. Sinclair of the Dept. of the Interior, a U. S. Gov. official, writes: "The stump puller is a wonder."

Ernest Thompson Seton, author and naturalist, declares the "K" "a great success."

Hundreds of owners write in, telling of pulling six- and seven-foot stumps, of pulling faster and pulling bigger stumps than by any other machine.

Special Offer I am making a special offer to get a "K" Stump Puller introduced in every neighborhood. Write me today for full information and for free book on Land Clearing.

Walter J. Fitzpatrick
Box 25 182 Fifth St. San Francisco, Cal.

H.G. Hunzicker of Foster, Wash., pulling a 24-inch fir stump with deep tap roots out of hard ground, without using powder or cutting any roots.

Tear Out and Mail Today

Walter J. Fitzpatrick
Box 25 182 Fifth St., San Francisco, Cal.
Send me full particulars on your special offer and your free booklet on Land Clearing.

Name_____

Address_____

Healthy, hardy chicks — do you know the secret?

WHY, OF COURSE, it's an *open* secret! You can sum it up, and boil it down, in two words: *proper feeding*. And proper feeding is an easy or a hard job—depending upon how easy or hard *you* make it!

If, for example, you depend upon Sperry Baby Chick Feed—there isn't anything to worry about. For this perfectly mixed ration makes healthy, hardy chicks—and that's no secret, either!

This explains why thousands of chicken raisers are so enthusiastic about it. They realize that, to make money in the chicken business, they must save a big percentage of each hatch. And, what's more, they have proved that chicks fed from the very start on Sperry Baby Chick Feed develop into sturdy, *profitable* chickens.

Remember—Sperry Baby Chick Feed is *absolutely gritless*. (You should, however, add about 5% fine shell and grit when using.) It contains the food values and constituents which Nature has taught the mother hen to scratch for her chicks It's clean, uniform, properly granulated and proportioned for the delicate organs of the baby chick.

Also remember this: the amount of feed eaten by a baby chick during the baby chick period is so small that the slight difference in cost between poor feed and Sperry Baby Chick Feed means nothing—especially when you realize that the saving of a very few chicks more than makes up for it.

So—why take chances, why experiment, when Sperry Baby Chick Feed puts the whole secret in the hollow of your hand? It's a *balanced ration* that gives your baby chicks *exactly* what they need.

If you want to know just how to feed your baby chicks for better results and bigger profits—send today for the new edition of our booklet, "Makes Hens Happy." Full of practical hints and profit-pointers! Send for your copy at once—it's *free!* Don't bother to write a letter—simply fill in and mail the coupon below. Do it today—NOW!

STOCK AND POULTRY FOOD DEPARTMENT

SPERRY FLOUR CO.

STOCKTON, CALIFORNIA

A32

Stock and Poultry Food Department, SPERRY FLOUR CO.
160 Weber Avenue, Stockton, California.

Please send me, without obligation, your booklet on baby chicks.

Name .....

Address .....

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SPERRY BABY CHICK FEED

"A Sperry Product"

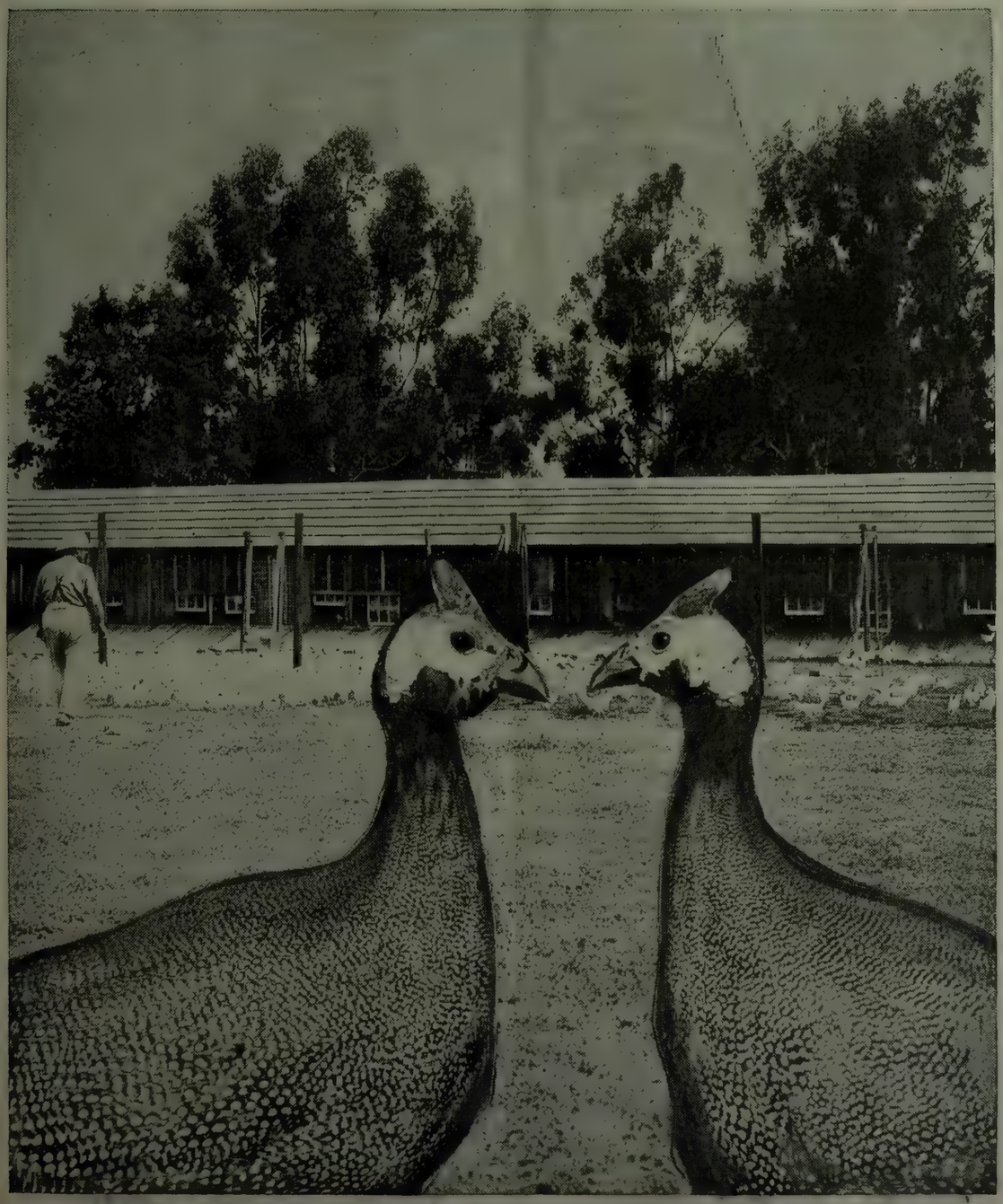
April, 1919

Amazing New Facts About Luther Burbank

10c Per Copy

ORCHARD and FARM

ESTABLISHED 1888



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Poultry Yard Policemen
(See Article in This Issue)

Offices:
Los Angeles and San Francisco

A Chance for the Land-Hungry Poor Man

'Chain'

'Usco'

Keep the Home Fields Earning!

This year, your car should be a more profitable proposition to you than ever. Europe is still looking to American farmers for food. And there's a ready market for everything you can raise.

Your car's a time saver—a distance cutter. It will help you keep the home fields earning. But to get its best work, you must give it good tires.

You'd be surprised to know how many hundreds of thousands of folks—both in the cities and on the farms—have decided that United States Tires are the best tires they can buy.

This year the proportion of United States Tire users is even greater than ever. War and war work taught the good judgment of putting good tires under a car or truck.

United States Tires are Good Tires

There is a United States Sales and Service Depot in your neighborhood. There you can get good tire service and sound advice as to the best United States Tires for your own individual use.

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

ORCHARD and FARM

VOL. XXXI. APRIL, 1919 NO. 4

PUBLISHED MONTHLY BY COUNTRY LIFE PUBLISHING COMPANY, EXAMINER BUILDING, LOS ANGELES, CALIFORNIA

Amazing New Facts About Luther Burbank

This personal interview with the world's greatest plant breeder, by the editor of Orchard and Farm, took place at Burbank's home, and reveals some interesting, remarkable and hitherto unpublished facts about his life and work. There is probably not one of our more than 100,000 readers who will not, through this intimate glimpse of the great naturalist's present-day life, gain a better understanding of his work and a closer acquaintance with Burbank himself. We publish this narrative, therefore, in the belief that it will lead to even greater interest in the articles which he regularly writes for exclusive publication in Orchard and Farm.

BURBANK of Santa Rosa; Burbank of California; Burbank of America! His name is inseparable from those of his town and State; yet all of America claims him with pride for its own. To have reached such a position is in itself a great attainment and must point to notable achievements. There are few men, in fact (and these are numbered among the envious ones) who will not concede to him the honors which he carries so modestly.

Yet because of his attainments and in spite of his modesty, Burbank is probably the best-advertised man in the world. The only parallel we could name is the German ex-Kaiser, whose present notoriety, of course, is not offered comparatively but by contrast. For Mr. Burbank has about as much use for Wilhelm as the average American doughboy or Liberty bond buyer. It is with no particular pride, therefore, but merely as an interesting anecdote of his remarkable experiences, that he recounts how the former Kaiser Wilhelm, prior to the war, wrote him personally, requesting that the chief of police of Berlin be allowed to visit his establishment for the purpose of learning something of his methods and, perhaps, securing new plants and data to be used in the beautification of the Berlin parks and boulevards.

Nor is this the only celebrity who, before the war, opened negotiations for a course in plant breeding under the tutelage of the great naturalist. One of Theodore Roosevelt's sons, Mr. Burbank says, once wrote him requesting information about a possible arrangement of this kind.

Some Mistaken Ideas

Like all great men, Burbank has been subjected to unjust criticism; publication of harmful, false statements and purported "interviews"; exploitation by the unscrupulous. His name upon thousands of dollars' worth of spurious products has made ill-gotten money for others. Through this cloud, however, his true worth and works have shown unsullied. Yet there exist many mistaken impressions about him and his activities.

Because Luther Burbank has done things with plants never before accomplished by any human being, most of his followers are inclined to credit him with a sort of uncanny, almost superhuman, foresight, even conceding to him the ability to recognize and explore hitherto unrecognized scientific phenomena.

rieties. But in developing them he did not explore a mysterious realm a thousand years ahead of his time. Rather, he WORKED BACKWARD a thousand years; yes, sometimes tens of thousands of years, digging out, by painstaking thought and study, the threads of plant history, which he wove together into an intimate understanding of their ways.

Through his recognition of the laws of evolution, as applied to plant life, he came to realize that characteristics which might once have been possessed by certain plants could, by selective breeding, be restored to them. By spending years upon certain experiments he became so well acquainted with the ancient history of the plant world that he could determine and "bring back" attributes long lost to visual observation. For instance, he conceived the idea that the cactus had not always possessed spines—had, in fact, grown them for protection under desert surroundings during an evolution requiring, perhaps, centuries. And in a few years he was able to "breed off" the spines and restore the cactus to its original smoothness. He does most of his work through study and selection, destroying a thousand plants for one that he keeps; choosing certain individuals for further propagation; crossing and budding and grafting.

No "secret formulas," alchemistry or magic are employed in Burbank's researches. He has progressed further than any other man in the science of plant breeding simply because he has had the intense interest and infinite patience to spend weeks and months and years on experiments which the average horticultural enthusiast would abandon within a few days. And in all this time he has studied constantly.

Probably no capitalist or professional man of Burbank's age has given closer attention to his business nor put in longer hours than the great naturalist during the half century that he has been at work. Yet when most men of his accomplishments, wealth, position and age have retired or passed away, Burbank, hale and hearty, still actively engages in the business of supplying the wants of thousands of customers and daily puts in long hours, not only at his desk, but upon his grounds and farms. Burbank is now 70 years old. He does not wear glasses except to read, and has not a stiff joint in his body. He looks the part of naturalist and student; yet in his working clothes, as he hurries from greenhouse to packing room or from experimental beds to office, he might be taken for a busy, energetic and successful nurseryman. His gray hair always stands up in defiant disorder, as though he had just run his hand through it. Age has tightened the lines about his gentle mouth, put some wrinkles in his cheeks, dimmed slightly his keen eyes, but probably will never dampen his enthusiasm nor quench his desire to continue with his work.

His Rules for Living

He attributes his present good state of health principally to temperance in all things and total abstinence from cigarettes and liquor. "My temperance," he said, "has extended also to eating. While never a faddist, I have always tabooed over-indulgence in rich food. While now I cannot eat as many things as I used to, still I enjoy better digestion than many men half my age. I take light exercise, but depend principally upon my outdoor work to supply the necessary physical relaxation.

"The only thing in which I have not been temperate is work. I have always worked like a Trojan. Hard work, combined with right living, has never hurt anyone."

Burbank has had visitors from every country on the globe. More than 500 persons, according to his rough estimate, are now on the way to see him from other lands. To name 5000 of the most prominent Americans would be to enumerate many of his Santa Rosa callers. Not long ago Thomas A. Edison and Henry Ford together met at his home.

Except, however, for business callers, he no longer tries to see the throngs who monthly seek his place. If he talked with them all, he points out, he would have no time for anything else. More than 5000 friends and curiosity seekers besieged his gates last summer during the busiest season, and in self-defense he was forced to make use of special application blanks, as illustrated on page 42, and to charge the sum of $10 an hour per person, for merely walking through the grounds. Even this, he says, failed to discourage the more insistent visitors.

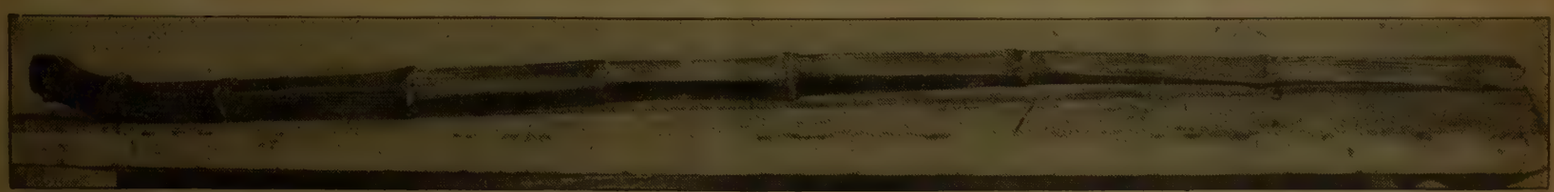
Some Startling Figures

Burbank has placed Santa Rosa (a town of about 5000 inhabitants) in the list of first-class postoffices. His mailing list, used for sending out catalogs, contains more than 60,000 names. The expenses of running his gardens, farms and office average about $60 a day.

I asked Mr. Burbank whether he had experienced difficulty during the war in securing adequate trained help, and did not understand why he smiled until he told me that, although he did not know the exact figures, there were on his waiting list more than 3500 names of men and women who wanted employment. Wherefore, we might conclude that the best solution of the labor problem would be to achieve world-wide fame.

Although Burbank is loved and honored by his fellow townsmen, the

(Continued on Page 42)



Nothing could be further from the truth, however, than these ideas. Not that Burbank lacks imagination, for without it he could not have visualized the types towards the establishment of which he has labored for so many years. Without a vision of the thornless blackberry, Burbank potato, spineless cactus, rainbow corn, Goldridge apple and "super" wheat, he could never have perfected these va-

Have You Ever Seen a Plant With a Square Stem?

The cane illustrated was made from such a plant. By selection from freak, wild specimens, Mr. Burbank has produced a number of these peculiar stalks, which belong to the sunflower family. The stems are in each case perfectly square.

This achievement has brought up the possibility of developing square trees bearing square fruit. And why not? The project does not seem impossible when undertaken by a man who has made the blackberry white and put all the colors of the rainbow into the leaves of Indian corn.

Oregon Poultry Methods

A paying chicken ranch, and how system and efficiency are used to offset high labor and feed costs. Money-saving equipment profitably employed.

By E. D. Roseman

PROFITS from poultry on the Baker-Hart farm in Western Oregon are being secured in spite of high feeding costs and the labor shortage. The flock of approximately 1100 hens yields a return of more than $5000 per year and the entire plant is cared for almost altogether by Mr. and Mrs. W. H. Hart.

Convenience in the location of stationary equipment and the installation of labor saving devices have made it possible to operate the plant with very little difficulty.

The chicks are all artifically hatched in a 5000-egg capacity incubator-cellar, located beneath the dwelling house. The proximity of the machines to living quarters greatly facilitates the work during the hatching season.

Care of the Pullets

Four colony houses accommodate pullets until laying time. These buildings are 8 by 40 feet with a shed roof sloping east, away from the prevailing winter winds. Each has a capacity of 200 to 250 birds and is provided with a wire covered open front, protected from the weather by an awning-like projection of the roof. Fresh water is constantly furnished at every house by means of a drip system with hydrant and overflow connections running all the time. The houses also are equipped with an automatic device by which pullets can release themselves and go to outside pens each morning.

Three brooder houses with a capacity of 700 to 900 chicks are required to care for each season's hatch. Brooding in large lots greatly reduces the labor, but Mr. Hart believes it is not profitable if too many chicks are sacrificed or stunted by the practice.

Accommodations for Layers

Laying hens are housed in a building of the semi-monitor type, 20 feet wide by 280 feet long. Glass, instead of curtains, provides for the direct entrance of a maximum amount of sunlight and holes in the back can be opened up for better ventilation in the summer. The house is divided into 32-foot sections by solid board partitions. These pens each accommodate 150 to 175 hens and communicate with one another through self-closing doors in the center of the partitions. This division makes possible a segregation of the layers according to age. As the hens mature they are moved down from pen to pen and when laying ceases they are killed for market.

Each pen contains its own set of equipment, consisting of dropping-boards and roosts, nests and hoppers for grit and mash feed. All mash hoppers hold over two sacks of feed and are practically self-feeding and waste proof. A carrier, four and one-half by two by one and one-half feet in size operates on a barn door rail through the center of the entire laying house. It is used for removing droppings, hauling straw, (baled for convenience) delivering grain and green food, and gathering the eggs. The first 32-foot section of the house is a grain and supply room.

Fresh running water is supplied to all parts of the laying house by the self-operating gravity system. Metal cups in each pen, all equipped with overflow connections and attached to one continuous pipe line with drain cocks and faucets, constitute the equipment. The faucet is turned off and the water all drained out of the building at night. It is turned on again in the morning and by the time the hens have been fed the cups have all refilled.

The Rations Used

"Feeding is an art that every poultryman must master before he attains any great success," says Mr. Hart. "Chicks must be started right, pullets given a growing ration, breeders fed to insure the greatest fertility of eggs, and layers supplied with food that promotes the maximum production. What to feed and how to combine for these different results is the secret of the whole business." Mr. Hart's feeding experiments have resulted in the development of rations that met satisfactorily the requirements for which they were designed.

Canned milk is used to start young chicks, as it has been found to eliminate a large percentage of bowel trouble. Pullets are fed all the whole wheat or corn they will eat at night and their hoppers are filled with the following mash: 75 pounds alfalfa leaves and blossoms, 120 pounds bran, 100 pounds middlings, 100 pounds corn or barley, 100 pounds ground oats, 25 pounds bone meal, 40 pounds

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To Keep Chicks Growing

This series of instructions presents valuable information about the care and feeding of young chickens from the time of hatching until they are three months old.

EVERY poultry raiser wants his chicks to grow well whether he plans to get them on an early market or to develop profitable layers. Early hatching is one of the first steps in this direction, but the next, which is of equal importance, is proper feeding. Undoubtedly chickens will grow faster when fed five times than when fed only three times daily. But it should be borne in mind that more harm can be done to the young chicks by over-feeding than by under-feeding. Young chickens should be fed not more than barely enough to satisfy their appetites and to keep them exercising, except at the evening or last meal, when they should be given all they care to eat. Greater care must be exercised not to over-feed young chickens that are confined than those that have free range, as leg weakness is likely to result.

The Chicks' First Meals

Inexperienced poultry raisers are tempted to feed chicks immediately after they are hatched, but this should never be done. No feed should be given before the chicks are 36 or 48 hours old. During the first week, feed them stale bread, pinhead oatmeal, rolled oats, hard-boiled eggs, or johnnycake. Crumbly, but not sloppy mashes, made by mixing with milk, are considered valuable. During the second week add cracked wheat, finely cracked corn and hulled oats to the chicks' ration.

After the chicks are ten days old, a good "growing" mash, composed of two parts by weight of bran, two parts middlings, one part corn meal, one part low-grade wheat flour or "red-dog" middlings, and 10 per cent beef scrap, may be placed in a hopper and left before them all the time. The mash may be fed either wet or dry; if wet, only enough moisture (either milk or water) should be added to make the feed crumbly. If this moisture is not used, a hopper containing bran should be accessible to the chickens at all times.

After the chickens are two months old they may be fed four times daily, with good results. When they are three months old, three feedings a day are enough.

Hoppers in Feeding Chicks

As soon as the chickens will eat the whole wheat, cracked corn, and other grains—usually in about 8 weeks—the small-sized chick feed may be eliminated. In addition to the above feeds, sour milk, skim milk, or buttermilk will hasten the chickens' growth. Growing chickens kept on a good range may be given all their feed in a hopper, mixing two parts by weight of cracked corn with one part of wheat, or equal parts of cracked corn, wheat, and oats in one hopper and the dry mash for chickens in another.

The beef scrap may be left out of the dry mash and fed in a separate hopper, so that the chickens can eat all of this feed they desire. If the beef scrap is to be fed separately, it is advisable to wait until the chicks are 10 days old, although some poultrymen put the beef scrap before the young chickens at the start without bad results.

Chickens confined to small yards should always be supplied with green feed, such as lettuce, sprouted oats, alfalfa, or clover, but the best place to raise chickens successfully is on a good range where no extra green feed is required. Where the chickens are kept in small bare yards, fine charcoal, grit, and oyster shell should be kept before them all of the time, and cracked or ground bone may be fed. The bone is not necessary for chickens that have a good range.

Housing Growing Chicks

Growing chicks should be provided with a house that will give them a place to stay in bad weather and at night. No particular style of house is to be recommended, but it should be so built that it will provide ample ventilation, dryness, sunlight and freedom from drafts, and be so arranged that it can be cleaned easily and frequently.

The lumber from piano and dry goods boxes can be used in building such a house, and when covered with ordinary roofing paper so as to keep out of rain will make desirable quarters. It is suggested that such houses be built on the colony plan, so that they can be moved from place to place, thus providing the chicks with fresh ground to range over. Elevating such a house 6 inches above the ground will help to keep the floor dry, by means of the circulation of air, and such space will also provide shade for the chicks.

In placing the chicks in their growing house for the first time, it is best to confine them by erecting a temporary yard wherein they can run for 5 or 6 days, until they learn where to return when the fence is removed and they are allowed their liberty. Care should be taken not to crowd the chicks by placing too many in any one house. When the chickens cover the greater part of the floor at night, it is an indication that they are too crowded.

Commercial Chick Feeds

When one has only a few chickens, it is less trouble to purchase prepared chick feeds, but where a considerable number are reared it is sometimes cheaper to buy the finely cracked grains and mix them together. Some chick feeds contain a large quantity of grit and may contain grains of poor quality, so that they should be carefully examined and guaranty as to quality secured before purchase.

The use of prepared mixtures is rapidly increasing among commercial as well as family poultry raisers, some of the standard brands now on the market offering a wonderfully balanced scientific system for progressive feeding. Before purchasing feed, the poultryman should at least do himself and the manufacturer the justice of investigating comparative costs and possible results as compared with the use of home-mixed feeds. In many cases this will lead to a decision in favor of the prepared food and in complete satisfaction. While the question of what feeds to use must be decided by each individual in accordance with his peculiar conditions, still it is reasonable to conclude that manufacturers of feeds, through their extensive experiments, have developed combinations which will give almost uniform results.

Electric Lights for Poultry Houses

Are no longer regarded as a fad or a joke. That the egg production of hens can be greatly increased by the judicious use of artificial lights has been demonstrated again and again.

So important is this phase of egg production now regarded that the leading agricultural colleges are conducting exhaustive experiments with lights, while numerous commercial poultry plants throughout the country are being equipped for lengthening the working hours of the busy hen.

Not only have experimenters succeeded in greatly increasing winter egg production, but they have, by the use of the lights, caused White Leghorn hens to lay heavily during the molt, and in some cases even to increase their production during this period!

April in the Home Vegetable Garden

South

By G. A. Klein

Of the Germain Seed Company

HOW about your backyard? Is it producing weeds or food? Is it littered with rubbish, planted to lawn or making money for you? Think it over. No matter whether you are an owner or a tenant, you have paid or are paying good, hard-earned money for the place you call home. Are you getting all the possible benefits and pleasures from your investment? Consider the tin can which you have thrown out with the ashes; what has been its purpose? Was it the container of vegetables or fruit which could not be compared with those which you could have produced right in your own backyard? Make 1919 a big gardening year; make your idle ground do its share. More varieties of vegetables can be successfully planted during the month of April than in any other month of the year.

You will never know the pleasure of gardening until you have once tried it. Although there were thousands who planted gardens last year for the first time, undoubtedly there will be thousands more this year, and, therefore, we offer here a few general suggestions to the beginner. In so doing we believe that we can assist in preventing the failures and disappointments which frequently fall to the lot of the novice.

Essentials of Gardening

There are five essentials to success: A good soil, thorough preparation of the ground, good seed, correct planting and proper care and cultivation of the plants. You may be fairly successful with your garden on any soil that can be made rich and friable, but if your soil is a cold, hard, lumpy clay or barren sand located in the shade of trees, vegetables will not grow. A liberal application of fertilizer will more than repay you in a larger yield and finer quality of vegetables, as we seldom find a soil that does not need enriching for best results. Either apply thoroughly decomposed manure and work it well into the soil or use a good grade of commercial fertilizer, which may be applied at the rate of five pounds to every 100 square feet. The fertilizer should be thoroughly mixed with the soil about a week before the time of the planting of the seed so that it will not come in direct contact with the seed or plant.

The soil should be well plowed or dug to a good depth at a time when it is not wet. If worked when too wet, it will become hard and will be difficult to handle all summer. The surface should be worked with a hoe or rake, and made as fine, smooth and friable as possible. After the soil has been thoroughly prepared, plant seeds of good vitality, procuring your stock of some good reliable seedman in whom you have confidence.

One of the chief sources of failure is hasty, careless, or improper planting of the seed. Soil should be of the proper temperature; that is, most favorable to the germination of the seed of each particular plant. Too high a temperature is often as detrimental as one too low. A mistake that is frequently made is the planting of certain varieties too early or too

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THE NORTH AND THE SOUTH

Are very broad divisions of the State of California, and it is, of course, impossible to prepare directions which will apply to every part of either section. As accurately as possible, however, Mr. Klein has answered, with his chart, the questions of southern gardeners, while Mr. Hincks has anticipated the needs of growers in the northern half of the State. Yet, all subscribers, north and south, will find much of value and interest in both of these articles, which were prepared especially for Orchard and Farm by these experienced seedsmen.

What the Gardener Needs

The essentials for a good garden are a little land, plenty of sunshine and water, a few seeds, some tools and an abundance of enthusiasm and work. Given these, all other difficulties can easily be overcome. At least one million families last year attempted gardening for the first time, and the greater part of them succeeded.

There is always something of interest in the garden from the turning of the first spadeful of earth to the gathering of the crops. There are difficulties to be overcome, but to the true home gardener a few potato bugs or some weeds merely are the obstacles to be met in any striving for good things. In some communities last year prizes were offered for the best gardens, but in many instances the winners never claimed them, for they considered the garden and its products their greatest prize.

Chart for April Planting in the South

VARIETY	Seed for 100-ft. row	Distance Apart of Rows	Distance Apart in Row	Time of Maturity of Crop	Depth of Planting
Artichoke, Globe	2 Pkts.	5 ft.	3 ft.	2nd Spring	1 inch
Artichoke, Plants	12 Plants	5 ft.	3 ft.	Next Spring	.....
Asparagus Seed	1 oz.	6 ft.	3 ft.	Third Spring	1 inch
Asparagus Plants	32 Plants	4 ft.	1 ft.	Next Spring	.....
Beans, Bush	1 lb.	3 ft.	6 in.	2 to 3 Months	1 to 2 inches
Beans, Pole	¾ lb.	3 ft.	1½ ft.	2 to 3 Months	1 to 2 inches
Beet, Table	2 oz.	2 ft.	6 in.	3 to 3½ Months	¾ inch
Brussels Sprouts	2 Pkts.	2½ ft.	1½ ft.	5 Months	½ inch
Cabbage, Early	1 Pkt.	2½ ft.	2 ft.	3 to 4 Months	½ inch
Cabbage, Late	1 Pkt.	2½ ft.	2 ft.	4 to 5 Months	½ inch
Carrot	1 oz.	24 in.	6 in.	4 Months	¼ to ½ inch
Celery	2 Pkts.	3 ft.	6 in.	4 to 5 Months	Very Shallow
Celeriac	1 Pkt.	1 ft.	2½ ft.	.....	⅛ inch
Chervil	3 Pkts.	30 in.	5 in.	2 Months	¼ inch
Chives	2 Pkts.	30 in.	5 in.	3 to 4 Months	¾ inch
Collards	1 Pkt.	30 in.	15 in.	4 Months	½ inch
Chicory	2 Pkts.	30 in.	8 in.	2 to 3 Months	¼ inch
Corn Salad	1 oz.	30 in.	8 in.	2 to 3 Months	¼ inch
Corn, Sweet	½ lb.	36 in.	12 in.	2½ to 3 Months	1 inch
Cucumber	2 Pkts.	6 ft.	4 ft.	2 to 3 Months	1 inch
Egg Plant	1 Pkt.	30 in.	2 ft.	4 Months	½ inch
Endive	1 oz.	30 in.	8 in.	3 Months	½ inch
Horse Radish	70 Plants	30 in.	18 in.	6 Months	.....
Kale	2 Pkts.	30 in.	18 in.	2 to 3 Months	½ inch
Kohlrabi	1 Pkt.	30 in.	6 in.	4 Months	½ inch
Lettuce	3 Pkts.	24 in.	8 in.	2 to 3 Months	½ inch
Melons, Musk	2 Pkts.	6 ft.	4 ft.	3 to 4 Months	1 inch
Melons, Water	1 oz.	8 ft.	6 ft.	3 to 4 Months	1 inch
Mustard	1 Pkt.	4 ft.	2½ ft.	3 to 5 Weeks	½ inch
Okra	1 oz.	3 ft.	2 ft.	3 Months	1 inch
Onion Sets	2 lbs.	18 in.	3 in.	2 to 4 Months	.....
Onion Seed for Sets	2 oz.	2 ft.	Drill	2 to 3 Months	.....
Parsley	1 Pkt.	24 in.	6 in.	3 Months	Very shallow
Parsnips	2 Pkts.	30 in.	8 in.	4 Months	½ inch
Peas	1 lb.	36 in.	3 in.	2 to 4 Months	2 inches
Pepper	1 Pkt.	36 in.	18 in.	3 to 4 Months	½ inch
Potatoes	5 lbs.	36 in.	10 in.	2 to 3 Months	5 inches
Potatoes, Sweet	70 Plants	36 in.	18 in.	3 to 4 Months	3 inches
Pumpkin	2 Pkts.	10 ft.	8 ft.	3 to 4 Months	1 inch
Radish	1 oz.	18 in.	3 in.	1 to 2 Months	½ inch
Rhubarb Roots	3 Roots	5 ft.	3 ft.	Next Spring	2 inches
Salsify	.....	30 in.	4 in.	4 Months	1 inch
Spinach	1 oz.	24 in.	2 in.	40 to 65 Days	1 inch
Squash, Bush	2 Pkts.	4 ft.	3 ft.	2 Months	1½ inch
Squash, Running	2 Pkts.	8 ft.	6 ft.	3 to 4 Months	1½ inch
Tomato, Seed	1 Pkt.	5 ft.	3 ft.	4 to 5 Months	½ inch
Tomato, Plants	35 Plants	5 ft.	3 ft.	2 to 3 Months	.....
Turnip	2 Pkts.	24 in.	6 in.	3 to 4 Months	½ inch
Turnip, Swede, Rutabaga	2 Pkts.	24 in.	8 in.	3 to 4 Months	½ inch

North

By Alfred W. Hincks

Of C. C. Morse and Company

THE lengthened April days, with their flood of sunshine bring trees everywhere into blossom. It's just good to be out of doors. Who does not like to garden in April when everything grows so rapidly?

This season is late and planting which is usually done in March has in many cases been necessarily postponed. In any year April is a great planting month. The very earliest vegetables have, of course, been put out, but the bulk of the planting—the "main crop" sorts will be planted now.

Keep in the soil the water which has fallen and don't allow it to evaporate by failure to plow and cultivate the ground. Work up your ground before you are ready to plant, and then go over it again just prior to planting. In a home garden many of the troublesome weeds can be kept under by early preparation and hoeing just before the seeds are planted. Not alone vegetables which you have planted, but the weeds also "appreciate" finely prepared garden soil and will make astonishingly rapid growth these April days. If you would save work, keep the weeds down when they are young.

What to Plant Now

April is a good month to plant beans in most places, although commercial beans are often not planted until later—even up to the middle of June.

The great division in planting dates is the time of the last killing frosts. Hardy vegetables for early crops may be planted before this time, but tender vegetables should not be planted until afterwards. April 15th is about the date of the last frost in Central and Northern California, but damp and cold soils should not be planted until even later. There is nothing to be gained in putting out eggplants, peppers, melons and other plants requiring warmth, where their growth will be checked.

Beets and carrots may be planted now, although most people have already made the first planting a month or more ago in which case the plants will be ready to thin out in about another month.

Celery is usually started in April in boxes. Celery is best when brought to maturity late in the fall. The seed requires an extra amount of water to make it germinate.

In your garden plant the sweet corn in a square block and the kernels will fill better than if planted in a single straight row, as there is better chance to pollenize. Protection against the worm which injures corn in some districts may be had by dusting with a little dry arsenate of lead when the silk is appearing.

Cucumbers can go out now. If, when the vines are bearing, the young fruit is kept picked they will bear for a very long season and are one of the most popular vegetables for home gardeners in this part of the country.

Lettuce is an all-the-year crop in California and successive plantings should be made during the entire season. Lettuce heads rapidly if it is not overcrowded. The best plan is to thin all varieties twice the first time, leaving twice as many as is desired and afterwards taking out every other one. The use of too many plants will prevent development just as much as weeds grown in the row. Ordinary varieties should be planted 8 to 10 inches apart.

Melons, like cucumbers, are best planted in hills because it is possible to throw a spadeful or two of well-rotted manure in the hills and to plant the seed above. Sow six or eight seeds in a space of a foot or more in diameter and later thin to the best three plants in the hill. Wait until it is possible to tell which are the strongest and best plants before thinning.

Peas should be watched carefully to make sure that the plant lice are not attacking them. The rate at which these insects increase makes prompt remedies necessary. Usually the lice are on the inside of the leaves and along the stems of the buds. Any tobacco extract such as Black Leaf "40," diluted according to directions and sprayed on the plants will prove effective in clearing out the lice. The process will have to be repeated in two weeks time and every 10 days or two weeks as long as warm, moist weather continues. The second planting of peas should be started now.

Set Out Boxed Plants

Peppers and eggplants will be growing nicely in boxes where they can be protected at night and kept ready for setting out early next month. In most places it is still a little early to set them out. Peppers are generally grown not closer than 18 inches apart for the home garden. Commercial fertilizer or manure will be beneficial when the plants are growing strongly.

Potatoes may be planted in all sections now. Be sure that the potatoes that you plant are disease free and do not contain spots or scabs on the outside or black lines in the inside. Beside reducing the crop the disease may get into the soil and injure your future crops unless care is exercised to see that only clean stock is used for seed. Deep working of the soil is necessary to grow potatoes and the ground must be hoed at least twice. Distance is usually 30 inches by 13. (It is a good idea to disinfect seed potatoes by soaking uncut potatoes two hours in a solution of one ounce of formulin to two gallons of water.)

Radishes are an all-year-around crop and successive planting should be made whenever they are required. Certain varieties like the Crimson Giant Forcing, Half Long and White Icicle as well as the mild flavored Chinese sorts remain crisp for a remarkably long period of time.

Squash and pumpkin should be planted in the latter part of the month. Sweet potatoes are best set out in May. Sweet potatoes are set out from slips which have been grown from old potatoes, placed in hot beds to make them sprout.

Tomatoes should be transplanted any time after the middle of the month. If these have been carefully grown they will be sturdy, and six to eight inches tall before transplanting.

Use successive plantings in your garden and you will more than double the output of fresh vegetables. Make good soil produce to its limit. Sow only good seed.

Plan your garden ahead and as soon as one crop is off know what you are going to use to follow it.

Why the Farmer Needs Federal Crop Reports

By Leon M. Estabrook
Chief of Bureau of Crop Estimates, U. S. Department of Agriculture

THE Government crop reports are prepared and issued by the Bureau of Crop Estimates of the U. S. Department of Agriculture at Washington, D. C. They are based on data collected through about 200,000 voluntary crop reporters, 56 trained field agent and crop specialists, various National, State and local organizations, and many other public and private sources of information. The data are tabulated and summarized by a large force of expert tabulators and computers and a Crop Reporting Board at Washington.

Crop-reporting dates are set a year in advance by the Secretary of Agriculture. Year after year and month after month the report is ready on the minute prescribed by the Secretary for its release. Summaries are issued to representatives of the press associations to be flashed over the country and to foreign countries for immediate publication, and are telegraphed to the field agents of the bureau in each State for issuance to the local press.

Full details are printed in the Monthly Crop Report published at Washington, and final estimates of acreage, yield per acre, total production, prices and value of all crops and classes of livestock are published in the statistical appendix to the Year Book of the department. The regular appropriation of the bureau for estimating approximately seventy different crops and classes of livestock in the fiscal year 1919 is $346,232, as compared with $2,023,255 for the Bureau of Markets, and $20,500,000 for the Bureau of the Census for taking the 1920 census.

Who Is Benefited?

"Of what value are the crop reports to farmers?" This is a question frequently asked by the voluntary crop reporters of the bureau, most of whom are practical farmers, and no doubt the same question arises in the minds of many other people who see references to the crop reports in the press. Crop reports serve the same purpose for farmers that inventories, or daily, weekly and monthly reports of output, sales and progress of work serve for manufacturers, corporations and other large business enterprises. All successful modern business is founded on statistics, and private concerns spend large sums of money in maintaining systems whereby all operations, expenses, stocks on hand, machinery and equipment, costs, sales and profits, in great detail are recorded and summarized periodically for their own business. Furthermore, as far as practicable, they try to obtain similar information regarding the business of their competitors. In no other way can the managers of such enterprises plan their operations or market their products intelligently.

Agriculture is not only the largest single industry in the aggregate, but it is fundamental to all other industries and of vital concern to all consumers. That is why the public takes a consuming interest in the business of farming. Unfortunately the business of farming is carried on by isolated, more or less independent individuals. I say "unfortunately," because agriculture is not yet thoroughly organized, and without organization individuals are powerless to do many needful things to enable them to compete on an equal footing with individuals in other industries that are organized. That is why the whole machinery of the Federal Department of Agriculture is organized as an agency of the Government to do for farmers what they cannot do for themselves as individuals, namely, to take an annual inventory of livestock on farms, of acreages planted to different crops, of yields per acre and total production. All this is done through the Bureau of Crop Estimates. Such information is absolutely essential as a basis for legislation in the interest of farmers, as a basis for the constructive work and programs of different branches of the Federal Department of Agriculture carried on to assist farmers in combating insect pests and plant and animal diseases, as a basis for improved methods of marketing their products, and as a basis for much of the work of the State Colleges of Agriculture and Experiment Stations, including the work of the County Agents. Information of this character supplied by the Bureau of Crop Estimates was of untold value to the Government and to the people of the United States during the continuance of the war.

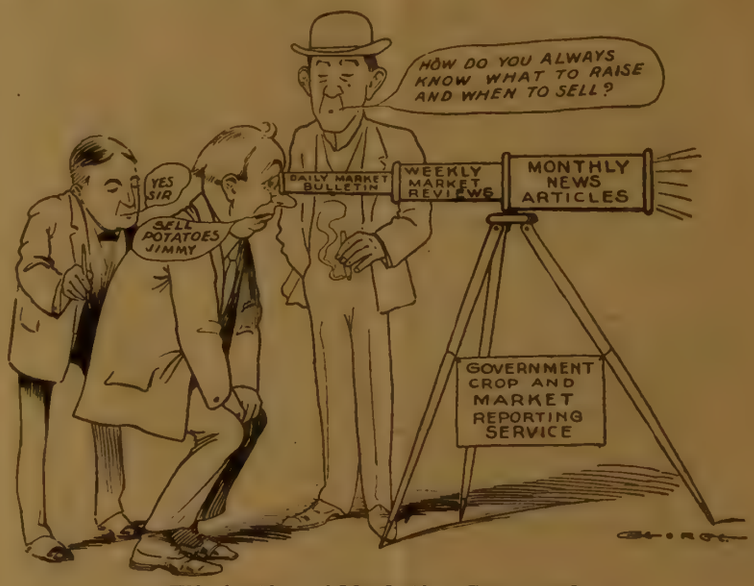
For the Business Farmer

The crop reports are of direct benefit to farmers in planning to grow crops and in marketing their surplus produce. In no other business is the law of supply and demand in relation to prices shown more clearly than in the statistics of crop and livestock production. These statistics show, with few exceptions, that the aggregate value of a crop in a year of large production is usually less than in a year of small production. That is why every farmer should study the crop reports closely to see whether the stocks on hand and the prospective crop this year is greater or less than last year, especially in competing States. He may be well informed of conditions in his own county, or even throughout his own State, but where the same crops are grown in many States he should know the prospects in all States, and even in foreign countries. For, by means of this knowledge, he can judge intelligently whether it will pay him to increase or decrease the production of a particular crop on his own farm and whether it would be to his advantage to sell his products as soon as harvested or hold for a few weeks or months until prices shall have become adjusted on a correct basis.

Other Direct Benefits

The Government crop reports benefit farmers directly, also, in that they are unbiased, disinterested and authoritative, and are published broadcast immediately within a few hours of the time they are formulated by the Crop Reporting Board, so that farmers get them as quickly as possible by telegraph, by telephone, by mail, and in their local papers. Farmers receive them just as quickly, as completely and as accurately as any other class of citizens. The fact that they are issued by the Federal Government makes them authoritative and prevents the issuance of false or misleading reports by speculators, just as the presence of courts and a constabulary prevent much crime and many acts of lawlessness in a city or county.

That the Government crop reports are disinterested and unbiased is insured by a Federal statute which prohibits any employe of the Department of Agriculture who is concerned in their preparation from speculating in any product of the soil, from giving out directly or indirectly any information regarding a forthcoming report in advance of the date fixed by the Secretary, or from knowingly compiling or issuing any false statistics, under penalty of a fine of $10,000 or imprisonment for ten years, or both.



Elimination of Marketing Guesswork

Is the province of the Bureau of Crop Estimates. The producer of food, no less than the dealer, is the beneficiary, for without these reports the farmer would be almost entirely "in the dark" while the middleman would be well posted through the medium of his private sources of information.

Indirect Help to Farmers

The Government crop reports benefit farmers indirectly by tending to stabilize prices. If consumption and supply remain the same there would be no reason for fluctuations in price. Consumption of farm products remains practically unchanged so far as supply and prices will permit. It is change in supply or prospective supply and resulting changes in price that affect consumption. Potential consumption remains practically the same with a tendency to increase as population increases. Uncertainty with respect to probable supply, therefore, is the most potent factor in causing fluctuations in price. When the supply is uncertain and prices fluctuate, the risk involved in carrying supplies is proportionately greater, and legitimate buyers and dealers are forced to buy at the lowest possible prices in order to protect themselves against loss.

When the supply is relatively certain, on the other hand, buyers can figure on a much closer margin and can afford with safety to pay higher prices. It is only the speculator who thrives on uncertainty of supply as affecting market prices, because his field of operations is unquestionably greatly extended thereby. In fact, speculators are about the only class of men who are hurt by Government crop reports, and they are hurt only because their business is based upon the uncertainty, ignorance or lack of information of others.

The value of Government crop reports in stabilizing prices depends upon their completeness, accuracy, dependability, disinterestedness and timeliness, and the resulting stability of prices is of direct value to farmers. Forecasts of production enable the whole marketing and distributing machinery of the country to make necessary adjustments to provide for a prospective shortage or a glut, thus avoiding the violent fluctuations in prices and the losses that would be inevitable without such prevision.

What Makes a Market

Consider for a moment how the product of the farmer reaches the final consumer. Take, for example, wheat. The farmer offers his wheat to a local miller or buyer for shipment. Perhaps the farmer does not know how much wheat is grown outside of his neighborhood, and does not bother about what happens to his so long as he can get a good price for it from the local buyer. He may not consider why the buyer is willing to pay $2 for wheat today when he paid only $1 a few years ago, inasmuch as it is assumed that each buyer wants to buy as cheaply as he can, just as the farmer wants to sell for as much as he can. But the local buyer must consider competition from the outside; if he must ship the wheat he buys to Chicago, he meets the competition of similar shippers from Kansas, Ohio and other States. Or, if the wheat is sold to a local miller, he is limited by the price at which Minneapolis or other competing millers might ship flour into his locality. So the real competition in the distribution of crops is not so much between the farmer and the local buyer as it is between the farmer of one State and the farmer of other States, or between the dealers of one State and the dealers of other States. The greater the certainty of production in competing sections, the higher the price the local dealer can afford to pay and will pay to the farmer for his products.

Transportation is also vitally affected. The crop estimates enable transportation companies to estimate the number of cars that will be required to move crops, thus enabling growers to obtain transportation fa-

(Continued on Page 43)

Do You Know

That the food producer—not the middleman—is the one who is most benefited by the Government crop-reporting service?

Mr. Estabrook answered our invitation to explain just how his department worked in the interest of the farmer by sending us this extremely valuable article for exclusive publication in Orchard and Farm.

We must confess that we did not realize the extent nor completeness of the service furnished by this wonderful organization; did not know, in fact, in how many ways its work might react toward the stabilizing of markets for agricultural products. If you are not taking fullest advantage of its service, you may find in this article information which will be of great future business value.

How to Ship Furs

WHILE spring is the farmer's planting-time, it is the trapper's harvest-time. For it is then that he ships the results of his winter's work and receives from his dealer the reward for his labor. The size of this reward will depend upon a great many considerations, not the least of which is the care used in shipping.

Each skin, when placed in the bundle, should lie perfectly flat and should be thoroughly cleaned. One skin should not be placed inside another or it may be overlooked. In general, furs should not be folded or rolled, for this practice destroys much of the good effect of the stretching.

Furs should be shipped either by express or by mail, never by freight. If shipped by express they should be packed securely in a burlap bag or sack and the sack tightly sewed. The burlap allows the air to get through and at the same time adequately protects the furs.

If sent by mail furs should be first wrapped in cloth and then in strong paper. The bundle should be fastened well; but not sewed up so that it is impossible for the postal authorities to inspect it if they wish, for then first-class rates will be charged.

Careful Marketing Important

Each bundle or package should be carefully marked for shipment. The large fur dealers offer trappers any number of their shipping tags free. The tags consist of outside and inside tags, on which the trapper writes his name and address. One tag should be placed on the outside of the bundle and the other on the inside. When this precaution is taken, if the outside tag is torn off in transit, the shipment will not be lost.

A few of the large fur houses not only buy furs, but also sell complete lists of trappers' supplies. Arrangements are made so that the trapper may buy whatever supplies he may need with his actual fur shipment and it is not then necessary to send cash with his order.

Save Every Copy

OF Orchard and Farm. At the end of the year we shall publish a complete index of all the numbers for 1919. You can then bind the volume for ready reference, and quickly find information upon any desired subject. Many of our readers find it easier to save each copy than to clip out special articles; frequently, moreover, the subscriber will destroy one valuable article in cutting out another. This new plan, therefore, should make Orchard and Farm even more useful to its big host of friends. But in order to secure the benefits of the complete index for the year, you must preserve your copy of each issue. And don't let your subscription expire.

Reconstruction and Farm Labor

This survey of the farm labor situation includes a statement of the 1919 policies of the United States Department of Agriculture and a review of some of the methods employed by farmers who have not been troubled by the labor problem.

TIME was, during the era of farm help abundance, when the farm problem was one of elimination. The farmer took stock of his community labor resources and employed the men who best suited his requirements. Now, in many cases, the question of obtaining an adequate labor supply is one of exploration, the farmer spending much time hunting for labor of any description.

American farmers need labor of two classes—permanent help to perform the year round, routine work on livestock and general farms, and emergency labor necessary during the harvesting, hay-making and silo-filling operations. The United States Department of Agriculture intends to continue during 1919 its work in locating and placing farm help. It intends to institute a campaign to provide plenty of emergency labor for the 1919 harvest. The services of the Boys' Working Reserve again will be enlisted, while patriotic appeals doubtless will be made to town people to assist in their respective localities in harvesting the banner crops expected.

Normal Rotation Urged

During the period of the war many American farmers have raised wheat to the exclusion of other crops and, to a large extent, have crippled their normal farming operations, inasmuch as they have plowed up old sods and permanent pastures which ordinarily have been stocked to capacity with livestock. These farmers are urged to resume their customary rotations, to seed large areas with leguminous crops, to practice sane, sensible and practical farming, and to maintain herds and flocks of livestock of superior quality. The pursuit of such a system not only makes for the permanent improvement of the individual farm, but it also promotes conditions highly attractive to the permanent labor supply.

Some Successful Methods

Farmers who for years have never been bothered with the so-called "labor problem" attribute their success in obtaining and retaining the services of qualified and experienced laborers to the following fact: They pay such workers attractive wages; they maintain permanent labor supplies; they furnish the married men with comfortable quarters as well as providing them with customary allowances, such as gardens, fruit, pork, poultry, milk and use of horses; they give the men cash presents at Christmas, or on completion of the haying, harvesting or silo-filling. Some of the farm owners carry life insurance policies for their farm help, with the understanding that when these men leave their present employ they must pay the premiums. Others carry accident insurance for their permanent laborers, while still others allow the hired help a certain bonus from the annual farm proceeds or permit the men to share in the net profits.

In many sections of the Middle West—even those near to industrial centers—there has been little farm labor difficulty during the last decade because the farm owners have made conditions so attractive on the farms for their laborers that the industries were not formidable rivals in competition for the services of these men. Married men are attracted by comfortable farm dwellings, good wages, kind treatment and other conditions which are within the easy grasp of the farmer, and which many agriculturists are beginning to appreciate as prerequisites for the maintenance of a permanent and efficient labor supply. Despite the fact that the industries took more men from the farms during the period of the war than did the fighting forces of Uncle Sam, no insurmountable obstacle is seen in the way of again directing such labor back to the country when it is no longer required for urban work.

What Wheat Acreage Means

American farmers are growing the largest acreage of winter wheat ever planted, and with the average condition of this wheat, 98 per cent on December 1 (according to the Bureau of Crop Estimates), all indications are for a record-breaking wheat crop which will fill the American breadbasket to overflowing. For each man required to plant this enormous crop four or five men will be needed to harvest it; hence the need for a great emergency labor supply, just as was required last year.

The organization of the Woman's Land Army now seems to be permanent and national, and no doubt the women will again be a really important factor in the nation's food production program.

Some men never learn that no amount of cussing will warm up the atmosphere sufficiently to start the tractor engine on a cold morning.

Ben's Well-Laid Plans Are All Upset

BEN GONNADOOIT threw himself down on the couch in the living-room of his small but well-kept home (Ben's wife was an immaculate housekeeper).

"You have wore me out; plumb wore me out with yer everlastin' argufyin'," he declared peevishly. "Now I don't feel able to do nothin' more today." And, since his wife merely maintained a haughty silence, he lighted his pipe and reached for a magazine, elevating his feet to a comfortable position as he continued his complaint.

"I might 'a' had thet garden all weeded ef I hadn't wasted so much time tellin' you why I ain't been able to get to it afore, and pointin' out thet I was plannin' to do it th' first chanst I got. Now th' day is most gone an' it's too late to get anything done anyway, so I won't start on it till tomorrow.

"May never get to it now, in fac'. I lost about th' only chance I'll have this week, fer them frosted potatoes is rottin' in th' bin. They're gettin' worse every day, but how kin I sort them out and fix th' leak in th' water-tank at th' same time, I'd like t' know.

"Ef ol' Nell hadn't got caught in thet barb wire an' cut her leg so as to delay me with haulin' wood I might 'a' fixed th' leak when it was small. Th' wire's been down all winter. Just my luck she had t' cut herself now when they's so much to be done.

"Well, th' leak's gettin' worse, an' now I'll have to wait till Fred Smith, th' plumber, gets through with th' job he's doin' before I kin get him t' shut down th' water an' disconnect th' pipes.

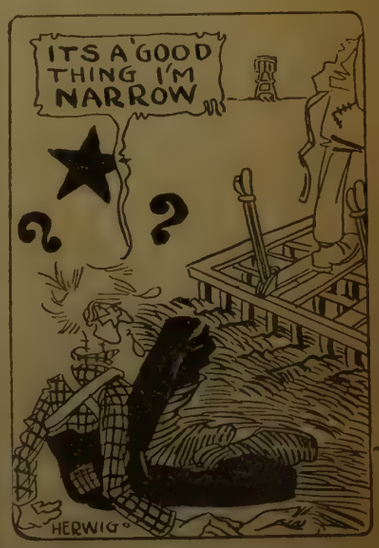
"Then I suppose it will be time t' errigate, but I kin put that off a few days if necessary. Oh, well, there ain't no use o' worryin'; that don't get a feller nowhere. Smells like sausage cookin' fer supper. Thet certainly looks good t' me. One thing I kin always do is EAT."

Butter-Making Hints

WHEN the butter is very soft and can not be worked with the paddle, I pour the buttermilk from the churn, and in its place, put the same amount of cold water. Next, I adjust the top of the churn and turn it slowly. I then change the water and work it in this way, until the last water is clear. After the butter is thus worked it usually becomes firm enough to manage with the paddle; if it is still soft, however, I add the salt and work it into the butter, in the same way. Then, if the butter is yet too soft to be molded, I take it from the churn and pat it firmly into a cold, wet bowl covering it with a wet waxed paper. The butter is then set in the bottom of the cooling closet, where I forget about it until it is needed. When it must be used I turn it over a plate. The butter slips from the bowl, nicely molded and if the bowl happens to be a "fancy" one, the butter, of course, bears its marks.

Immediately after churning I fill the churn half full of hot water, add a tablespoonful of washing powder, adjust the top of the churn and churn the water and powder into a heavy suds. This cleans the churn thoroughly in less than a third of the time it takes to wash it in the usual way. Then after it is scalded and dried the churn is ready to be put away.

By the use of this method the extra dishes ordinarily needed in churning are saved; the busy housewife, moreover, is spared the bother of waiting for the butter to become firm enough to work out, and finally, the operation is finished all at one time.—Helen R. C. Temple.



There was a young farm-hand named Darrow
Went to sleep in the path of a harrow.
But while underneath,
He missed all the teeth—
Then remarked: "It's a good thing I'm narrow."

IF WE SHIP YOU

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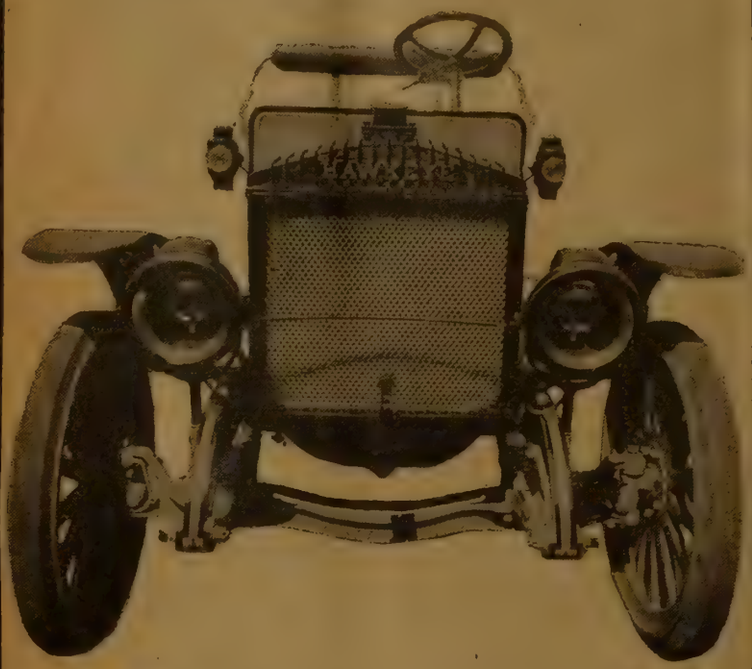

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for you to keep and use for a month as your own

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then agree to show the Truck to ten or more of your friends and tell of the easy terms and exceptional offer I make, all of which I will explain if you will say on a postal "send particulars of truck offer," and address your postal card or letter to **E. E. Gerlinger,** Director of Sales and Advertising, Pacific Coast, Room 524, 112 Market Street, San Francisco, Cal.?

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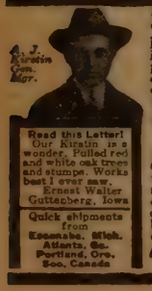
I'll Send This Stump Puller for YOU to TRY 30 Days FREE



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Read this Letter! Our Kirstin is a wonder. Pulled red and white oak trees and stumps. Works best I ever saw. Ernest Walter Guttenberg, Iowa

Quick shipments from Kosciusko, Miss. Atlanta, Ga. Portland, Ore. Soo, Canada

Kirstin ONE-MAN Stump Puller

Cuts land clearing costs **way down.** Labor shortage no longer prevents pulling land-wasting stumps. Weighs less. Costs less to buy and use. Has greater speed, power, strength and **lasts longer!** Several speeds! Low starts 'em—high **rips 'em out quick!** Patented quick "take up" for slack cable. Easily moved around field. Free book explains Special Agents' Offer, etc. Shipment from nearest distributing point saves time and freight. Write today. Address **A. J. Kirstin, General Manager, A. J. KIRSTIN CO.** 400 East Morrison St., Portland, Ore.

FREE BOOK Describes One Man Clutch Model; One Man Drum Model; and Horse Power Model. Tells Cheapest Way to clear land for Big Crops. Write today!

Truck Gardening Suggestions

Suggestions to beginners and pointers for April by H. L. Musser, president Aggeler and Musser Seed Company.

THIS is the month in the year when the gardener has the broadest range for planting because any summer crop may be planted during this month throughout California.

Many truck gardeners use a special rotation of crops which they pursue regularly year after year, and they are generally among the most prosperous because they become expert, not only in growing these crops but in the handling and marketing of them.

Truck Gardening is a science with many phases. In order to succeed one must be, first of all, a good gardener, expert in handling one's particular kind of soil. The successful vegetable grower must also know the best methods of tillage and fertilizing; must be expert in the selection of seeds; must know when and how to plant them, and when to harvest the crop, and must realize that the marketing is the most important branch of his work. He must be a shrewd business man in order to sell to the best advantage the crop he has grown at great labor and actual cash outlay.

Seasonable Suggestions

Some truckers make a specialty of growing sweet corn and melons; both crops are planted during March, April and May, and are ready for market in July.

The successful producer gets acquainted with his market and learns what varieties are demanded, so that he can immediately supply the demand.

While this gardener is marketing his melons and sweet corn he is growing plants of cabbage and cauliflower so that when the melons are marketed and the ground is prepared for planting his winter crop, the plants are ready; he thereby avoids any loss of time in the use of his ground. He also plants lettuce as a second crop.

Many gardeners specialize in sweet potatoes; others in a regular assortment of bunch vegetables, such as carrots, turnips, beets, radishes, green onions, salsify and spinach. Other vegetables which may be planted in April are peppers, eggplant, tomatoes, squash and pumpkins. The problem of the trucker is so to regulate all of these crops as to time and acreage that he will secure maximum returns.

Probably the greatest degree of uncertainty is faced by the grower of onions and potatoes. The most expert grower gets caught in the ups and downs of these crops.

From observation of trucking and marketing, my advice to the beginner is: Do not be discouraged if disappointment comes the first year. You will gain experience and education; you will do better and better each year as you become more and more expert.

Take your seedsman into your confidence; it is his business to know and to give information concerning the varieties best suited to your purpose, and he will gladly help you in the selection of your seed.

Onion Thrips

How to control this enemy of home gardeners and truck growers. A small insect with a bad reputation.

THE onion thrips is an insect so small that it is almost invisible to the unaided eye, but it is prolific and one of the most serious menaces to the onion-growing industry of this country. It causes an annual loss to this crop alone estimated to be at least $2,250,000. Although the insect has a particular liking for onions, it preys upon other garden and truck crops, such as cabbage, cauliflower, cucumbers and melons, and also has a ravenous appetite for greenhouse and many ornamental plants, particularly roses.

The first indication that an onion field has been attacked by thrips is shown by the leaves, which become whitened. In advanced attacks the leaves are curled, crinkled and twisted and finally die down permanently. To control this pest, begin spraying with nicotine sulphate solution as soon as there is any evidence of the presence of the insect. If spraying is delayed until hundreds of young thrips are present the crop will be seriously injured. The spray material is made by the following formula: ⅜ pint of nicotine sulphate (40 per cent), 4 pounds of dissolved soap, and 50 gallons of water. The spray should be applied thoroughly as a fine mist.

Unusual Precautions Necessary

It is not advisable to plant other crops, such as early cabbage and cauliflower, upon which the thrips feed, near the onion fields. After onions, cabbage and related crops are harvested, the field should be cleaned up to destroy any breeding places of the insect. They will continue to thrive on any portion of these plants or weeds that might remain in the field. It is a good practice to plow as deeply as possible and to harrow the ground after harvest. Much of the injury can be avoided by planting as early as possible and by using quick-acting fertilizers after the onions are well set or the bulbs have begun to form.

Swine Meeting

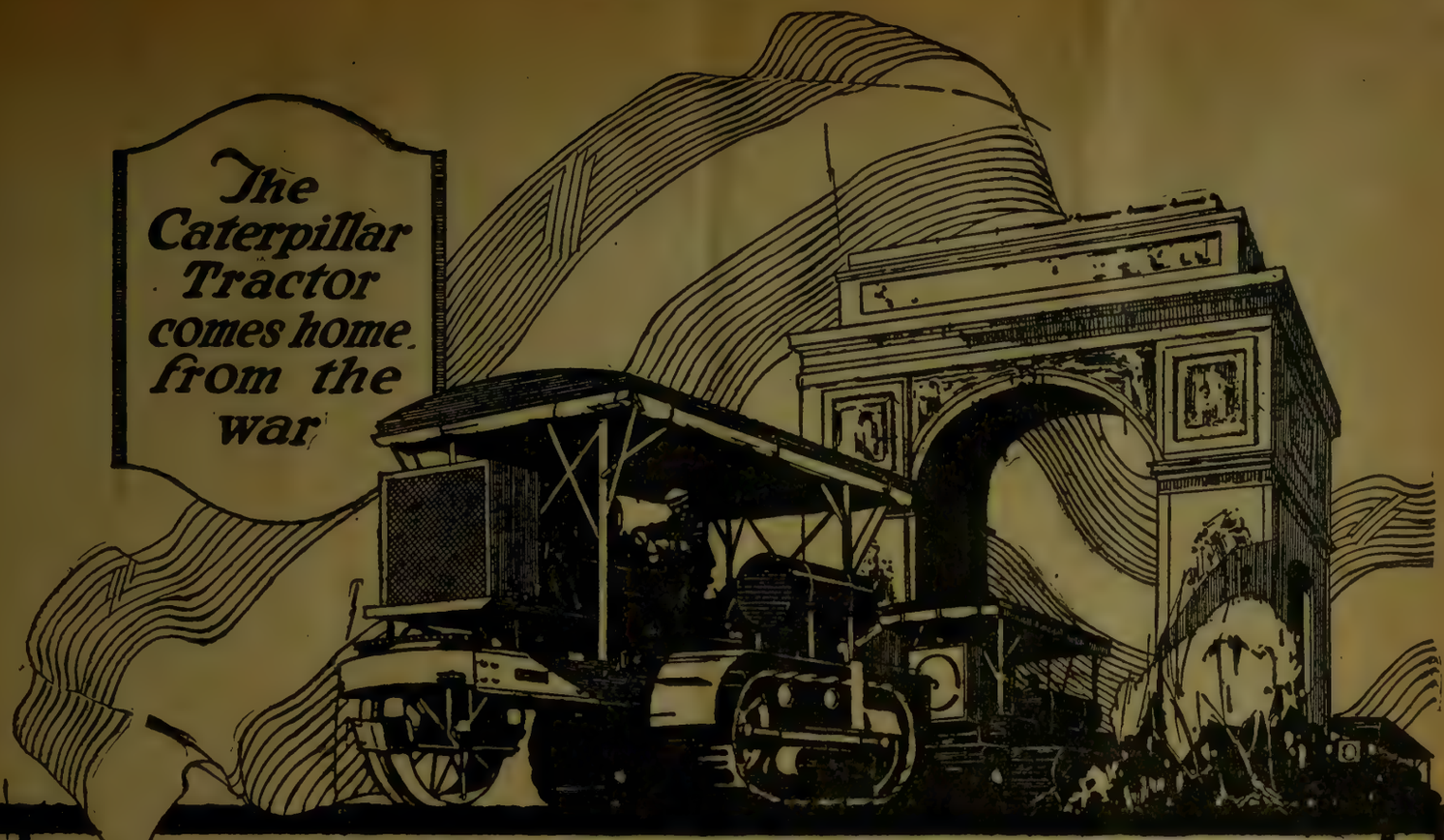
The annual meeting of the California Swine Breeders' Association will be held at the University Farm, Davis, California, April 10th, 1919, at 10 a. m.

Many other livestock associations of the State will meet at Davis this same week. There is to be a Shorthorn sale on the 8th and a Hereford sale on the 9th.

Another Big Article

By Hardy W. Campbell, the great tillage expert, will appear in the May number of Orchard and Farm. Don't miss a single one of these instructive, interesting contributions.

Which is the more profitable, extensive or intensive farming? Is it better to raise a small crop in a big field or a big crop in a small field? Mr. Campbell will discuss these questions in an authoritative manner in his next article. Watch for this feature and the others with which the May number will abound. The Orchard and Farm family deserves and must have the best.



FOCH launches a drive. Yanks, Tommies and Poilus hurl themselves against the enemy line, and drive it back—slowly at first, then faster, and finally the enemy is in full retreat with the Allied Infantry right at his heels.

But the position is a dangerous one. It may be a trap—it might be, were the "doughboys" unsupported. But not this time! For the Allied Motorized Artillery is right behind the infantry, ready to throw a protecting barrage at a moment's notice.

Motorized artillery, and therein lies the secret of its effectiveness. Officers and men in automobiles and motorcycles; supplies and lighter ammunition in motor trucks, and heavy guns and caissons hauled by "CATERPILLAR" TRACTORS.

Now that hostilities have ceased, the part which the "CATERPILLAR" Tractor did toward winning the war is no longer a state secret.

Long before America entered the war The Holt Manufacturing Company was supplying "Caterpillar" 75 and 45 Tractors to the English and French. And as early as 1915, the U. S. Bureau of Ordnance, too, had conducted extensive tests and had decided to equip the first entirely motorized artillery corps the world had ever known—using "Caterpillar" Tractors exclusively for the heavy work.

These tests brought out—and four years of the most strenuous war service confirmed—two outstanding advantages of tractor-drawn artillery.

First, it was more efficient—could go faster—could go *anywhere,* regardless of the weather and no matter how shell-pitted the terrain.

Second, it was more economical—men and money were saved for important service elsewhere.

Of course, only the "Caterpillar" Tractor would do for the most strenuous war-time service. The self-laying-track principle, first successfully applied to a tractor by Benjamin Holt, and *proved out* in peace times upon thousands of the farms of America and other countries, was peculiarly fitted to conditions upon the battle-fronts. And the "Caterpillar" Tractor, both of itself and as the mighty armored "Tank" was able to do an incalculably great part in the overthrow of autocracy.

But at last the stress of war is ended and the Holt factories are again on a pre-war basis, able to make immediate deliveries of "Caterpillar" Tractors and prompt shipment of extra parts, released from important Government demands but strengthened by their war service and experience.

The same efficiency of principle; the same rugged construction—the same "Caterpillar" Track design, turning engine power into drawbar pull with minimum loss and enabling this tractor to work anywhere, any time—all the qualities which won for the "Caterpillar" Tractor honor upon the battlefields of Europe—are at the disposal of American Agriculture as in the days before the war.

Reconstruction time should be tractor time. Write today for full information regarding the "Caterpillar" Tractor—ask for Catalog 395.

"Caterpillar" Tractors built only by Holt or under Holt contracts and patents—the only track type of tractor adopted, after rigid tests, for the hardest war service of America, England and France

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The World's Most Promising Forage Plant

By H. C. Davis

THE following report by Professor P. B. Kennedy of the Grass and Forage Plant Investigation Department, University of California, Berkeley, made after a long period of experimentation and investigation, justifies the belief of many enthusiasts that Elephant Grass is to occupy a place of tremendous importance in our agricultural development. In speaking of the grass last month, Professor Kennedy said:

"Napier Fodder has a great future in the warmer parts of the United States, including Southern California, parts of Arizona, New Mexico, Texas and south into Mexico and South America. No forage plant has yet been discovered that will grow so rapidly or produce such enormous yields of fodder in such a short period of time."

WHAT is Elephant grass? While savants are conducting profound disputations as to whether it is **Pennisetum purourum, Benthami** or **Schimperi**; while one California seed house is blandly listing it among the sorghums; while a native of Australia clings to the theory that it is the wild Natal or Reed grass of his home land, and South African reports claim it as originating in that country; while a dozen different names have been bestowed upon it; while confusion reigns, in fact, concerning many of the important questions involved in the scientific classification of this newly-imported forage crop, enterprising ranchers of California are, in large numbers, overlooking all questions but the essential one of utility, and are planting it in large quantities.

Their verdict is unanimous in one important respect: They like it and believe that it offers tremendous possibilities for profit. Judging from the evidence of pioneer experimenters, there is no difference of opinion as to its worthiness for general adoption. In the points of practical interest to the farmer it has already amply demonstrated its superiority under cultivation, not only in Africa and Australia, but in Florida and other States of the South, and in California.

What It Is

Elephant (or Napier) grass is, first of all, a perennial; that is it grows for a number of years without replanting. It is drought and frost-resisting. It is a fodder-crop giving a phenomenal yield, acknowledged by the first authorities of the west to be the heaviest producing perennial in existence and probably to have outstripped in this respect even the most productive annuals. It is a nutritive feed which, according to an official analysis, compares very favorably with sugar cane. It is palatable, fed green, either as hay or as silage. It is a plant easy to propagate and just as easy to eradicate; it will grow in almost any kind of soil.

Elephant grass is also known as Napier Fodder. This name was given to this important new crop in honor of Colonel Napier, an Englishman, who first brought it into experimental cultivation. He first called the attention of the Rhodesian Department of Agriculture in 1908 to its value as a fodder crop.

In its native home in tropical Africa, where it is called by the natives Elephant grass and Zinyamunga, it is well known and widely distributed, but has only within recent years been produced under cultivation. In its wild state it grows in a great variety of soils under varying climatic conditions. It is reported as growing very luxuriantly and has been known to attain a height in the wild state of 23 feet. It can be grown at various altitudes.

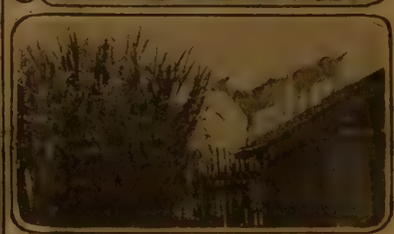
For the past few years the Departments of Agriculture of the various States of the Union of South Africa (as well as Australia where it was introduced several years ago) have been actively experimenting with Napier Fodder under cultivation, and have gone deeply into the work begun by the Rhodesian Agricultural Department. Full reports, including historical records and practical experiments, have been published by these various Governmental authorities, making available much important information on the subject.

Withstands Severe Conditions

It was first proved in Africa that this native of tropical latitudes would withstand severe exposure. J. Burtt Davy, former government botanist in South Africa, in a communication says: "Our seed farms at Vereeniging are situated practically on the High Veldt, at an altitude of about 4850 to 5000 feet. They form part of bleak, high plateau, without shelter of hill or tree, and are cold and windswept in winter; therefore we were doubtful whether Napier grass would stand the winter there. However, we obtained cuttings late in autumn, and these were planted in a sheltered spot, but were not otherwise protected. A few failed to root, but the majority pulled through in spite of the severe drought and cold (approximately 10 degrees Fahr. in the open). These plants now stand 10 feet high."

This experience has been upheld by many later ones. Napier Fodder has lived through the past two winters in several of the interior mountain valleys of California where rather severe cold is experienced. In spite of the unusually cold winter just passed, reports have come in already this spring from the San Joaquin and Antelope valleys, as well as from mountain districts, declaring roots to be in excellent condition even where leaves and canes were frozen to the ground. A correspondent from Gardena, Cal., writes that of 100 plants set out at the late date of Nov. 1st, 1918, probably two-thirds have survived the winter, though the young plants had scarcely started to grow before the frost seemingly killed them. "We had much frost and ice," he states.

A large number of cases can be cited to illustrate the remarkable drought-resisting ability of Napier Fodder. Colonel Napier's earliest reports dwell very strongly on this point. In Australia a published report of experiments with Napier Fodder by various Government experiment stations as well as a large number of farmers' experiments under Government supervision during the summer of 1917-18 give drought-resistance as one of its outstanding qualities. In California a number of instances can be given where this grass already has made excellent growth through months of dry weather without irrigation. In the San Jacinto valley, in Antelope valley and in the foothills near Lakeside, Cal., small plots of this grass have withstood severe drought hardships as young plants, having had to establish themselves under difficulties from the beginning.



SOME CONVINCING ILLUSTRATIONS

Of the Remarkable Yields Secured by California Growers of Elephant Grass or Napier Fodder.

Do animals like it? The goats shown in the lower right-hand photograph left alfalfa and grain, jumped a fence and climbed upon a shed roof in order to partake of the succulent leaves.

A Tremendous Yield

Probably the most striking feature of this new fodder is its remarkably prolific growth and heavy production. From Africa, Australia and unanimously from all California growers who have had experience with it, comes the same story. Belonging to the millet family, it far exceeds in production any of the pearl millets, a heavily yielding group. In appearance much like the sorghums, it promises to outstrip in yearly tonnage any of these annuals.

A report published by the Agricultural Department of New South Wales, Australia, giving details of a weighing test made at Hawkesbury Agricultural College follows:

"On the 8th of October, 1917, a test was started with three clumps, to be cut, weighed and fed to cows every time the clumps reached a height of about three feet. The following table shows the date of each cut, and the height and weight of the 3 clumps when cut:

Date Cut	Height of Clump Ft.	Weight Yield of 3 Clumps Lbs.
7th November, 1917	2½	50
7th December, 1917	3	50
8th January, 1918	4	100
8th February, 1918	3	74
26th March, 1918	3	49

"The above estimate shows a yield of 5 cuts during the season's growth, representing 60 tons per acre, approximately, of green fodder."

What Are Best Conditions?

Few individuals have attempted weighing tests. One test made at the place of Eugene Spencer of Los Angeles in the summer of 1918 gave an estimate of 60 tons of green fodder to the acre, and highly conservative agricultural authorities are granting that this figure may probably be attained under proper conditions. One of the well known authorities of Australia, E. Breakwell, B. A., B. Sc., says of Napier grass that it "has remarkable rapidity of growth and stooling characteristics. It can be cut five times in a season, and in coastal districts will produce up to 50 tons of green fodder per acre."

It will, therefore, be seen that, while markedly drought resisting, Napier Fodder bids fair to reach its highest destiny as an irrigated crop. Certainly it makes a wonderfully rapid and luxuriant growth.

Mrs. Florence Galbreath of Pixley says that her plants will easily average 50 stools to the plant. On the ranch of H. L. Wagner, of Descanso, San Diego county, plants averaging between 40 and 50 stools each reached a height in the summer of 1918 of 17 feet 6 inches.

Elephant Grass for Feed

When scheduled to be used for hay, the grass is not allowed to mature the hard canes, but is cut at a height of from 3 to 5 feet. At this stage it presents a veritable mass of succulent leafage. Several California ranchers testify that it makes an excellent hay.

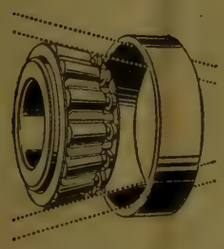
African authorities expect Napier Fodder to prove its highest value as a silage crop. A report from the Agricultural Department of the Union of South Africa says, "Within the Union it is probable that Napier grass will be found invaluable as a perennial silage-crop, as it gives a heavy yield of fodder per acre, and does not need to be replanted from year to year." Early reports from the U. S. Department of Agriculture indicated that the toughness of the ripened canes might prove a detriment in making silage, but this difficulty has been found to be easily obviated by cutting the crop before maturity. A slightly longer development than for hay making seems desirable. Excellent silage has already been made and fed out by at least one rancher of California.

The feeding qualities of Napier Fodder have fortunately proved fully as pleasing to stock men as its achievements in production. In the thorough experiments conducted in Australia during the summer of 1917-18, before referred to, the opinion of a large number of farmers was asked. These farmers themselves grew this grass on farmers' experimental plots, and on their own ranches under governmental direction, and fed it to their own stock. The report, made in August, 1918 (which is, of course, the middle of winter in Australia), when full data on the subject were in, makes this strong statement: "Up to date not a single farmer has reported adversely as to its palatability."

C. V. Piper, in charge of Forage Crop Investigations, United States Department of Agriculture, says, "The leaves and young canes are eagerly devoured by horses and cows," and again, "No other grass that can be

(Continued on Page 16)

TIMKEN TAPER



Dotted lines show how the inside of the "cup" of a Timken Bearing is *tapered* to fit over the *tapered* rollers.

"Take Up" instead of "Wear Out"

Suppose that valves couldn't be ground when they got leaky.

Suppose there wasn't any "spring" to piston rings.

Suppose bolts couldn't be tightened up after they worked loose.

Your truck, tractor or motor car would be mighty short lived if it were not for take-up at these and other points where wear goes on. Rattles and pounds would soon develop to tear the machine to pieces.

In the bearings which always have to stand a lot of hard knocks and heavy pressure, take-up is especially important. The take-up feature of the Timken Roller Bearing enables you to make a new bearing of it at the end of every season. All that's needed is a part turn of an adjusting nut or the removal of a shim.

Another important thing that Timken Taper does for the tractor, truck or passenger car, in wheels, differential, and other points of service, is to take end thrust just as well as downward load.

Because of Timken Taper, Timken steel and workmanship, Timken Bearings not only resist wear themselves, but they protect and extend the life of other important working parts of the machine. Learn more about Timken Taper in the booklet "Timken Bearings for Farm Tractors."

THE TIMKEN ROLLER BEARING COMPANY
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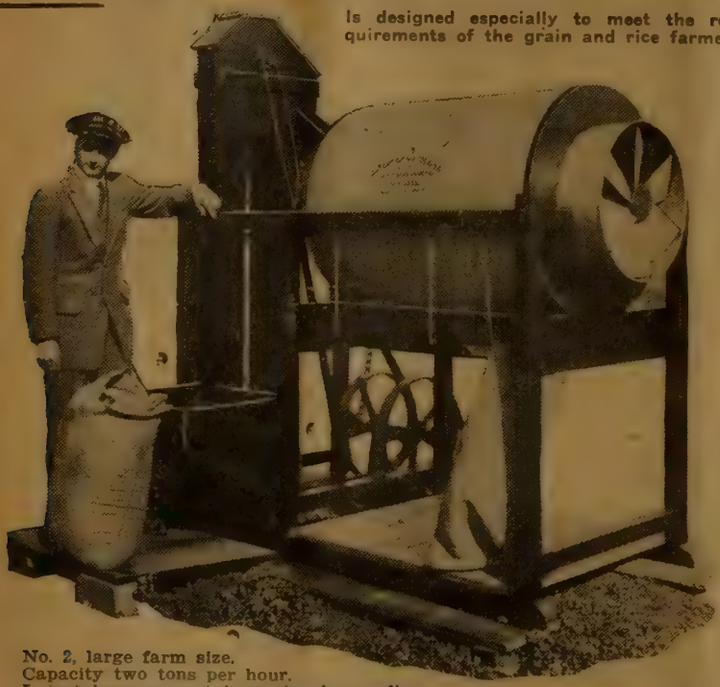
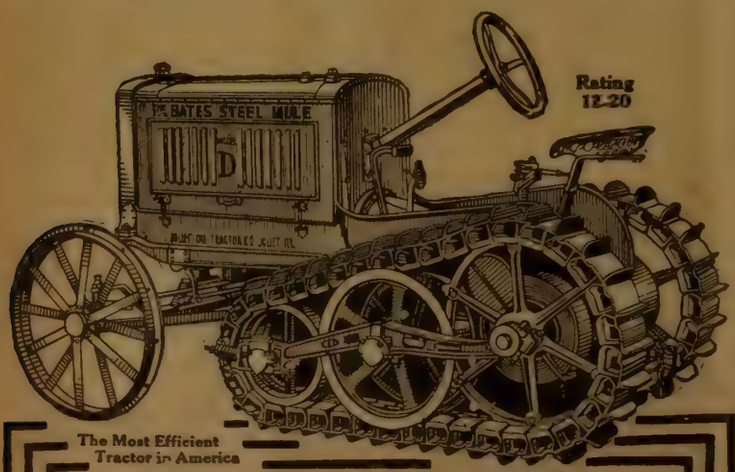
ROTARY GRAIN CLEANER

Is designed especially to meet the requirements of the grain and rice farmer.



No. 2, large farm size.
Capacity two tons per hour.
Latest improvement in grain cleaner line.
It has a principle all its own.
A new invention that has no equal for selecting the best seed for planting.
Cleans Wheat, Barley, Oats, Rice and Kaffir Corn.
Cleans thoroughly and quickly; is simple in principle and durable in construction.
A 1-h. p. gasoline engine is all the power necessary to run it under full load.
We invite you to be present at the Tractor Demonstration at Sacramento May 6th to 11th to see five of these Graders in operation on five different grains.

Manufactured by
GRAVITY GRAIN GRADER COMPANY
328 N. East Street **Stockton, California**



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PROVED CRAWLER DURABILITY

Correct mechanical principles and the knowledge of the proper materials and methods of using them make the crawler shoes of the Bates Steel Mule of great durability. Such is the result of six years of experience with thousands of tractors in the field.

Just as important are the heavy duty valve-in-head kerosene motor, the hardened cut steel transmission gears, the Timken roller bearings and the dustproof working parts.

The Only Crawler Tractor Adapted to Beet Cultivation Without Making Changes

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Policemen of the Poultry-Yard

Guineas are a valuable addition, in more ways than one, to the farm poultry flock—if you can "stand the racket."

GUINEA fowls are equipped with din-producing organs, which rival in their effect the braying of the mule, the penetrative clamor of the tick-tack and the turmoil of the charivari. However, farmers and poultrymen have capitalized this talent of the guinea. Because these birds raise a hue and cry whenever marauders visit the poultry yard, many farmers place a few guineas with each farm flock to act as policemen. They sound the alarm of approaching danger. Furthermore, the guineas are favored with pugnacious dispositions, which enable them to combat hawks and other common enemies of the flock and thus to keep the yards free of such objectionable guests. Often a few guineas are raised with a flock of turkeys and allowed to roost in the same tree, where they can give warning if any theft is attempted during the night.

Delicious Meat

The popularity of guinea fowls as a substitute for game birds such as grouse, partridge, quail and pheasant is increasing among those who are fond of this class of meat, and the demand for these fowls is steadily increasing. Many hotels and restaurants in the larger cities are eager to secure prime young guineas, and often they are served at banquets and club dinners as a special delicacy. When well cooked, guineas are attractive in appearance—although darker than common fowls—and the flesh of young birds is tender and of especially fine flavor, resembling that of wild game.

There are three varieties of domesticated guineas—Pearl, White, and Lavender, of which the first is most popular. Good size and uniform color are considered the most important characteristics in the conformation and appearance of guineas. The male and female look alike, although experienced persons will notice that usually the males have larger helmets and wattles and coarser heads. The cry of the female resembles "buckwheat, buckwheat," while the call of the male is a one-syllable, hair-raising shriek.

Eggs Good for Home Use

Guineas lay fewer and smaller eggs than ordinary hens, and on this account and also because the shells are so thick and dark that it is almost impossible to candle the eggs, dealers do not like to handle them, although for home use guinea eggs may profitably replace hen eggs. Guinea hens usually begin laying in April and May, those in the South starting earlier than those in the North. From 20 to 30 and often more eggs are laid before the guinea hen becomes broody, at which time she can be broken of her broodiness easily by removing the eggs from her nest, when she will soon begin laying again. If not allowed to sit, guinea hens will continue to lay throughout the summer, yielding from 40 to 60 and in some cases 100 eggs during the season.

Raising Guinea Chicks

Chicken hens are used commonly to incubate guinea eggs, but guinea hens, turkey hens and incubators may also be used successfully. The usual setting for a guinea hen is about 14 eggs; for a general-purpose hen, such as a Plymouth Rock, 18 eggs, and for a turkey hen about 24 eggs. The incubation period for guinea hens is generally about 28 days.

Chicken hens make the best mothers for guinea chicks. Each hen that is to have a brood should be allowed to hatch out some of the eggs herself, after which she will mother all that are given her. After the hatch is completed the hen and chicks can be removed to a coop. Conditions about the barnyard are very unfavorable for the raising of guineas and on this account the coop should be placed in a distant pasture or field and the hens and guineas kept there until the latter are old enough to go to roost. Like chickens, guineas require adequate protection from rain and exposure.

Require Less Feed

Guineas are fed in much the same manner as chickens, except that they require smaller amounts of feed, as they are natural rangers and will "rustle" sufficient weed-seeds, grasses, buds, insects and green vegetation to supply much of their living. The first meal should consist of a small quantity of hard-boiled egg mixed with bread crumbs, or the bread may be soaked in milk, squeezed partially dry and fed in small bits. Clabbered milk also is good. Three times a day is often enough to provide food. Sprouted oats, dandelion leaves, lettuce or onion tops, cut fine, should be provided if plenty of good range is not accessible. As the birds grow older, whole wheat, oats and cracked corn may be fed.

The guinea's desire to roost develops at the age of 6 to 8 weeks, although if raised with a hen these birds can be induced to follow her into the henhouse and roost there. It is advisable to accustom the birds to the henhouse; otherwise it will be almost impossible to catch them at market time. As a rule, wholesale prices for guineas in Eastern markets range from 75 cents to $1 a pair for dressed springers weighing one pound apiece, and from $1.25 to $1.50 a pair for those weighing three to four pounds to the pair. Old guineas are not in demand and seldom sell for more than 50 cents to 60 cents a pair.

A healthy demand for guineas as breeding stock pays from $2 to $4 a pair and $3 to $6 a trio for quality birds. The call for eggs for hatching purposes is greater than that for breeders, settings of 15 eggs from pure-bred birds bringing from 75 cents to $1.50.

In the East the raising of guineas has reached the point where hatcheries have been established for the sale of day-old chicks.

The marketing season for guineas is during the late summer and throughout the fall. The fowls usually are sold unplucked, as they look more attractive with the feathers on and sell more readily. However, for hotel and restaurant trade, guineas should be dressed in the same manner as other fowl.

In most sections of California the supply is not equal to the demand either for dressed guineas or for eggs and breeding stock. While the market will always be limited, it is safe to say that there is an excellent opportunity for anyone to work up a nice business, either exclusively or in connection with the raising of other poultry, especially if connections are established with hotels and restaurants.

Hatching Pointers

Set only good sized eggs which are uniform in size.

Set only well shaped eggs, uniform in shape.

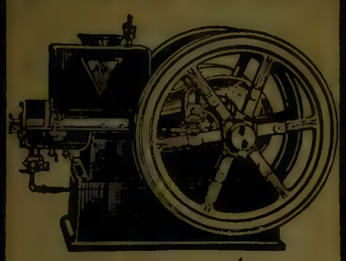
Set only good colored eggs uniform in color.

It is worth while to use care in selection, as eggs of good and uniform size, color and shape are marketable at higher prices than small eggs of varying color and shape.

Eggs weighing less than two ounces should not be used for hatching. The large sized egg hatches a large chick, and this larger chick grows faster than the smaller chick. Moreover, the larger chick will be marketable as a broiler sooner.

Furthermore, the larger chick matures more quickly and begins laying sooner than the smaller chick. Therefore the income is received sooner and they are more profitable.

ALPHA



PUMPING ENGINES

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Compare the Alpha with any other engine. It is much more carefully made—you can see that at once. Alpha Quality means—longer life, better satisfaction, lowest operating cost, no troubles, better results. The easiest starting, most perfectly balanced engine made.

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De Laval Dairy Supply Co.
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BEEMAN
GARDEN TRACTOR

It plows, harrows, cultivates, runs any 4-h. p. stationary machinery. WRITE FOR CATALOG.

H. V. Carter Motor Co.
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Agricultural Implements of All Kinds.

TIRES Tubes and **"ARMOR"**
5,000 Mile Guaranteed Quality at
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	Tires	Tubes	"Armor"
30 x 3	$13.60	$2.90	$3.00
30 x 3½	17.00	3.45	3.60
32 x 3½	19.65	3.60	3.60

Other sizes quoted on request.

Order these 5,000 mile Beacon "Rib-Skid" Tires, Red Tubes and "Inside Armor" at above prices on money-back approval, or write at once for full description and our plan of selling First Grade, Fully Guaranteed Tires, etc., direct to you at wholesale prices. Give size of tires and name of car. Address

MODERN TIRE CO., 656 7th Street, RACINE, WIS.

Jot Down That Short Cut

You have discovered and send it in for our Prize Contest. Write name and address plainly. Over $100 in prizes. Help the other fellow with your discoveries.

ORCHARD AND FARM, Los Angeles

Poultry Methods

(Continued From Page 4)

fine fish-meal, 20 pounds fine meat-scrap and 25 pounds oil-meal.

Layers are fed according to the following formula: 100 pounds alfalfa leaves and blossoms, eight sacks bran, two sacks middlings, two sacks shorts, 300 pounds fine ground oats, 300 pounds corn (if old corn can be obtained at moderate prices, otherwise screened barley meal is substituted), 50 pounds fine bone, 100 pounds oil-meal (reduced one-half during summer), 15 pounds mustard bran (omitted during spring and early summer). Meat-scrap and fish-meal, half and half, is added to the extent of

Automatic Door Release

A—Wire frame and door; B—Hook to hold door shut; C—String or wire; D—Lever; E—Board upon which pullets step to release trigger and open door (A).

16 to 18 per cent of the total weight of the above. If no corn or barley is used the ground oats is increased by 100 pounds.

For breeders the same formula is used with the following alterations: 300 pounds alfalfa leaves and blossoms is used; the fine bone, oil-meal, and mustard bran are omitted; and not over 15 per cent in weight of meat-scrap and fish-meal is added.

All products are marketed direct to the consumer, through the Portland public market. Some 14,000 dozen eggs besides two or three hundred cull cockerels and old hens are sold each year. Superior quality in all products and attractiveness of the package used for display in the markets have contributed largely to the marked success of the Baker-Hart establishment.

Who Does Your Pumping?

If it is a windmill, what do you do when there is no wind?

If your hired man, what do you do when he is sick?

If yourself, what do you do when you have to make a trip to town?

Your thirsty cattle must have water just the same.

The FULLER & JOHNSON Farm Pump Engine

answers the question correctly. It will pump the water *any time, all the time.* It doesn't need wind, it doesn't get sick. It don't have to wait until you return. It is always on the job. It is so simple anyone can run it and is perfectly safe to handle.

Comes to you ready to run, no brakes, belts, or platforms needed. Don't wait until something happens. Get one NOW. *The price is very low and it costs very little to run one.*

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NEW FOOD PRICES

with which we herewith solicit your grocery business.

The American housewife can save the world by cutting her daily expenditures.

New food prices are ready for the housekeeper to take advantage of.

If you pay more than these prices for the articles listed here, you are encouraging waste. You can even anticipate your needs and put in a supply for the future by ordering in dozen lots, thereby saving more time and effort. Do it now.

The brands listed here are all well and favorably known to every careful and thrifty American. You cannot miss by ordering.

You owe it to your own good judgment as well as to your pocket to put your order in the mail now.

TO TAKE ADVANTAGE OF THIS GREAT MONEY-SAVING OPPORTUNITY, BE SURE TO READ THE LIST OVER CAREFULLY AND ORDER TODAY IN PACKAGE OR DOZEN LOTS. COMPARE PRICES WITH PRICES YOU NOW PAY.

NAME	Size	Pack	Price Pkg.	Price Doz.
Royal Baking Powder	One	can	$0.39	$4.52
Rumford Baking Pwdr.	1 lb.	can	.27	3.00
K. C. Baking Powder	25 oz.	can	.21	[illegible]
Del Monte Ketchup	1 pt.	bot.	.23	2.70
Postum Cereal	Reg.	pkg.	.10	2.10
Quaker Oats	2 lb.	pkg.	.13	1.52
Cream of Wheat		pkg.	.23	[illegible]
H. O. Oats		pkg.	.16	1.80
Grape-Nuts		pkg.	.12½	1.45
E. C. Corn Flakes		pkg.	.10	1.15
Kellogg's Corn Flakes		pkg.	.13	1.52
Quaker Puffed Rice		pkg.	.13	1.52
Quaker Puffed Wheat		pkg.	.13	1.52
Quaker Puffed Corn		pkg.	.13	1.52
Fancy Apricots	2½s	cans	.29	3.15
Fancy Peaches	2½s	cans	.32	3.75
Fancy Pears	2½s	cans	.32	3.75
Fancy White Asparagus	Lge.		....	[illegible]
Del Monte Asparagus	Lge.	white	.33	[illegible]
Del Monte Corn, Fancy			.23	[illegible]
Western Corn			.17	[illegible]
Del Monte Peas	2s		.18	2.10
String Beans, Std.	2s		.14	[illegible]
String Beans, Fancy	2s		.20	2.40
Tomatoes, solid pack	2½s		.18	[illegible]
Tomatoes, Standard	2½s		.15	1.80
Dunbars Shrimps	Small		.17	1.98
Dunbars Shrimps	Large		.32	3.75
Vermicelli	1 lb.	pkg.	.10	....
Salmon, Medium Red			.22½	2.75
Salmon, Pink			.18	2.10
Red Salmon	1 lb	can	.24	2.80
Oysters, Fancy	1s		.18	2.10
Oysters, Fancy Large	2s		.33	3.90
Tuna, white meat	½s		.20	2.35
Tuna, white meat	1s		.35	4.00
Raisins		pkg.	.13	1.52
Currants	1 lb.	pkg.	.32	3.75
Knox Gelatine	Reg	pkg.	.17	1.98
Jell-O, any flavor	Reg.	pkg.	.10	1.18
Lye	1s	can	.09	1.08
Chloride of Lime			.11	1.30

NAME	Size	Pack	Price Pkg.	Price Doz.
Coleman's Mustard	½s	pkg.	.67	5.60
Coleman's Mustard	1s	pkg.	.95	11.30
French prepared Mustard			.12	1.35
Toilet Paper, Rolls	7 oz.	pkg.	.09	1.05
Macaroni	per lb.	pkg.	.10	....
Crisco	1 lb.	can	.32	....
Olive Oil	Qts.	can	1.60	....
Olive Oil	Gals.	can	6.25	....
Cotton Seed Oil	Gals.		2.40	....
Beechnut Peanut Butter	Jar		.12½	1.45
Corn Starch, best	1 lb		.12	....
Gloss Starch, best	1 lb.		.12	....
Salt, Shaker	2 lbs.		.09	....
Campbell's Soups	Reg.	can	.11	1.30
Hominy, Canned	3s		.14	1.60
Del Monte Tom'to Sce.	8 oz.		.08	.95
Log Cabin Syrup	Small	tin	[illegible]	....
Log Cabin Syrup	Medium	tin	[illegible]	....
Karo Syrup, blue	1½s	can	.15	1.75
Karo Syrup, red	1½s	can	.18	2.10
Babbitt's Soap	Reg.	cake	.07	[illegible]
Octagon Soap	Reg.	Cake	.08	.95
Lennox Soap	Reg.	cake	.05½	.65
Fels Naptha Soap	Reg.	cake	.07½	.88
Strycker's Sand Soap	Reg.	cake	.04	....
Sapolio	Reg.	cake	.08	[illegible]
Bon Ami	Reg.	cake	.09	1.06
Lux Soap Chips		pkg.	.12	1.40
Ivory Soap	Small	cake	.07	.82
Palm Olive Soap	1	cake	.11	1.25
Sunny Monday Soap	1	cake	.08	[illegible]
Crystal White Soap	1	cake	.06	.70
Tea, green	per lb.		.40	....
Lipton Tea	½ lb.	pkg.	.40	....
Old Dutch Cleanser			[illegible]	[illegible]
Babbitt's Cleanser			.07	[illegible]
Octagon Cleanser			.07	[illegible]
Matches, Safety			.12½	1.50
Prophylactic Tooth Brushes			.25	2.90
Pebeco Tooth Paste			[illegible]	4.25
Bicycle Playing Cards			.25	2.50
Cough Drops, Pine Needle			[illegible]	.45

Ghirardelli's Ground Chocolate	1 lb.	pkg.	.31
Ghirardelli's Ground Chocolate	3, 5 or 10 lb.	tins	.29 lb.
Ghirardelli's Breakfast Cocoa	1 lb.	pkg.	.37
Schepp's Shredded Cocoanut	1 lb.	pkg.	[illegible]
Extra Quality Coffee, best ground or bean	1 lb.	pkg.	[illegible]
Aunt Jemima's Pancake Flour, Regular	2 lb.	pkg.	.14
Extracts, Pure Vanilla or Lemon	1 oz.	bot.	.11
Extracts, Pure Vanilla or Lemon	4 oz.	bot.	.33
Extracts, Pure Vanilla or Lemon	8 oz.	bot.	[illegible]
Extracts, Pure Vanilla or Lemon	16 oz.	bot.	1.15
Lea & Perrins Worcestershire Sauce	Small		.30
Arm & Hammer Baking Soda	1 lb.		.08
Milk, Carnation, Alpine or Libby's	Large		.15
Milk, Carnation, Alpine or Libby's	Small		.07
Proctor & Gamble's Naptha Soap	Reg.		.06
Twenty Mule Team Borax Soap	Reg.	cake	.07
Cane Sugar, in 48 or 100-lb. sack	Per lb.		.096

Delivery costs you as much on FIVE dollars' worth as it does on TEN, therefore, the larger amount YOU order, the more money YOU save.

Send your order now accompanied by bank check, postoffice money order or express money order. If you send currency, you must register the letter, or we are not responsible for same.

Write shipping instructions, your needs, name and address plainly. Prices guaranteed for 10 days. We issue NO catalogs.

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74 New Montgomery Street, San Francisco.

Any Bank in San Francisco

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POSTAL STORES INCORPORATED

MOLASSES

We are pleased to announce that we can again supply that superb feed, HAWAIIAN CANE MOLASSES. UNCLE SAM has been taking most of it for the past two years, but now that the war is over, it is again available for stock food. We can supply any quantity, in barrels or tank cars, for quick shipment anywhere, and at about half the price of feed corn.

Better write immediately for prices and full particulars.

W. H. YOUNG COMPANY
58 Sutter Street, San Francisco

A Chance for the Land-Hungry Poor Man

By Prof. Walter E. Packard
Assistant State Leader of Farm Advisors, Berkeley, Cal.

Land for the Landless

The Permanent Cure for the Idle Acres Curse

Not by ruinous taxation; not by imperialistic grabbing of private property and socialistic division of it among land-hungry people, will the curse of idle acres be removed from California. Nor will Bolshevist doctrines ever bring about any improvement in the welfare of the State or the Nation.

Not by tearing down but by building up is true progress maintained. The type of man who will benefit his State and Nation by becoming a land owner is not the kind who wants to get something for nothing; the ambitious and self-respecting man wants only a little "boost," just enough capital and time and encouragement to get "over the top" by his own efforts.

The trend of the times is indicated by the measures which are now being taken by Governments throughout the world to assist the poor man to become a property owner. The all-essential capital must be provided; yet private capital cannot be expected to bridge the gap between the land and the landless. The public treasury must therefore be drawn upon.

Secretary Lane's plan to provide work and homes for returning soldiers, as outlined by him in the November issue of Orchard and Farm, is now being worked out in practical details. It is anticipated that the next session of Congress will "start the wheels aturning." Canada is about to embark on a great land settlement program. And here in California the present session of the Legislature is considering ways and means of continuing on a larger scale the good work now being carried on so successfully at the Durham colony. It is rumored that a large tract of land near Fresno will soon be acquired by the State and sold to worthy settlers on the extremely favorable terms outlined in this article.—The Editor

[illegible] for home building at the government is to be an essential part of the administration program. Some means must be provided, too, among the [illegible] with limited capital a fair chance.

Science to the Rescue

The State of California is studying a scientific method on this question of the problem by establishing a colony where the successful experiments of other countries can be demonstrated under California conditions. The Durham colony, as stated in the first report of the Land Settlement Board, "provides for a demonstration in practical rural development. Instead of leaving things to happen and then correcting unfavorable conditions after they occur, the State is attempting to create organized rural neighborhoods in accordance with carefully thought out plans."

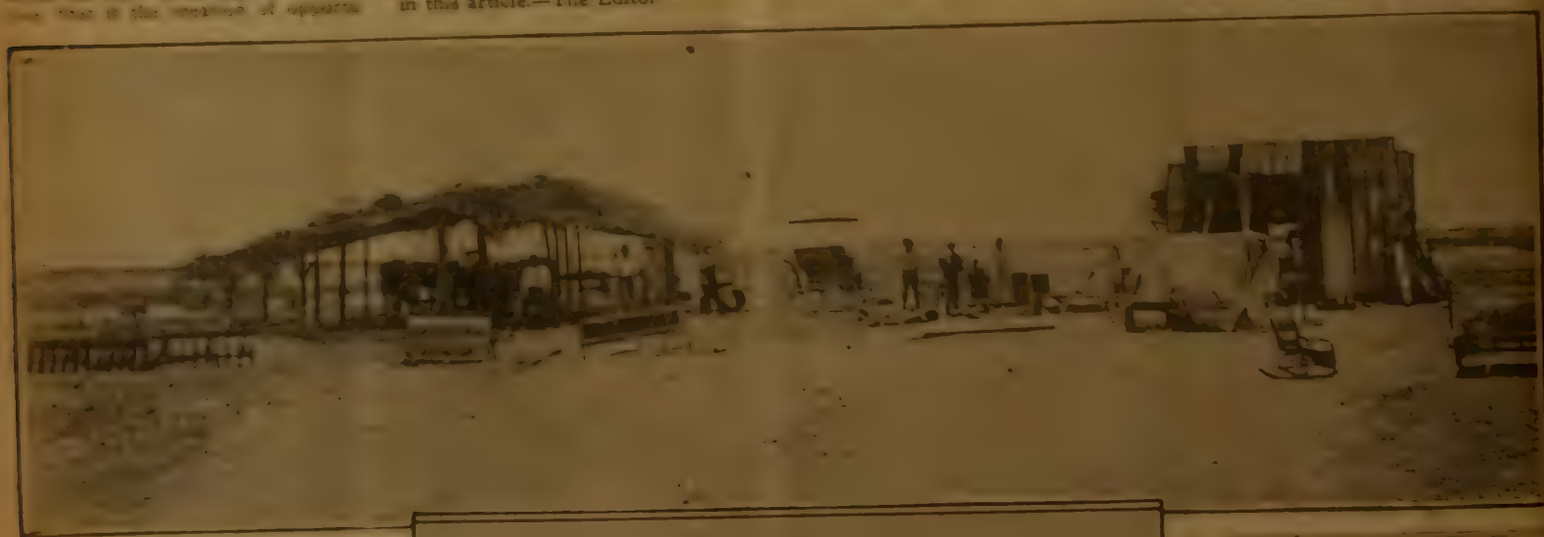
Dr. Elwood Mead (a recent contributor to Orchard and Farm), formerly Chairman of the State Rivers and Water Supply Commission and chief engineer of the Water Supply Department of the Government of Australia and now head of the Division of Rural Institutions of the University of California, is actively directing the work as chairman of the Land Settlement Board of California. He has recently been occupied also at Washington, assisting in the working out of Secretary Lane's plan.

The success of the California colony will point the way to the creation of opportunities in every State, not only for the returning soldiers, but for the young men who are being trained in scientific agriculture in our high schools and colleges and who have no capital at their command with which to begin a start. The principles which are developed in the Durham colony apply as aptly to Virginia, to New York, to Wisconsin or to the South.

Attractive Terms Arranged

Perhaps the most important feature in the plans for the Durham colony is the terms of purchase. The experience of every colonization enterprise in California indicates that a more liberal financial policy would have been good luck for the settler and for the company. The rising price of land together with the lack of opportunities to purchase on favorable terms, not only hinders the ambitious settler who has the will to work and no capital to invest, but also is the cause of the rapidly increasing tenantry in America. An applicant for land at Durham who has a capital of $1500 or the equivalent equipment in implements and stock, can by the payment of 5 per cent of the purchase price, secure an allotment. The State furnishes 60 per cent of the cost of improvements, such as ditches, fences, buildings and leveling land. The cost of purchasing livestock is also included. The payments for both land and improvements are made on the amortized plan, the interest being at the rate of 5 per cent per annum. Thus, by the payment of 8 per cent of the purchase price per annum the entire indebtedness, both principal and interest, is wiped out in twenty years.

(Continued on Page 16)



The Old Way and the New

The upper illustration is typical of the conditions surrounding thousands of ambitious but inadequately capitalized homesteaders who have attempted to take up Government land in various parts of the West.

In contrast, is offered the peaceful farm scene in the lower picture. It is one of the allotments at the Durham colony, where the buildings were constructed and the crop planted before the settler moved in, and where all that is needed to make the farmstead homelike is a little time for the shrubs and flowers about the house to reach maturity.

All Inquiries Should Be Addressed to
STATE LAND SETTLEMENT BOARD, AGRICULTURAL HALL, BERKELEY, CAL.

There could be no stronger stimulus to industry on the part of the settler than the assurance of success afforded by the terms allowed on the Durham colony. We may take for example the experience of J. N. Thornton, who has undertaken to buy a farm at Durham. With $600 as his cash capital he selected 57 acres which cost him $9405. He paid $475 down as his 5 per cent payment. The Land Settlement Board had prepared and seeded wheat on 54 acres, so that when Mr. Thornton took possession, the crop was almost ready to harvest. When the seed was threshed and all costs paid, including reimbursement to the Board for the cost of putting in the crop (amounting to $702) Mr. Thornton had $1200 with which to begin more intensive farming operations. It would have been impossible for Mr. Thornton, with the capital at his command, to have purchased land in California with any possibility of meeting the payments as they are normally demanded. He would have been forced to work as a tenant or as a farm laborer until he had acquired several times the amount of his present capital, and even then would not have had the assurance of success in the investment that he enjoys under the terms granted him by the Land Settlement Board.

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The "OLD FAITHFUL" work shirt will give you that feeling of genuine comfort every man seeks.

"OLD FAITHFUL" is typically American—built *big* throughout to permit great freedom of action—triple stitched on all strain seams—reinforced—has two large pockets with buttoned down flaps, just where you can reach them easily. Go to your dealer—ask him for "OLD FAITHFUL". It's one of the family of

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Look for the name "Reliance" in a work shirt—it is a guarantee of quality.

"Black Beauty"—"Army"—"Honor Bright," the latter for boys, are other familiar Reliance brands.

RELIANCE MANUFACTURING COMPANY
WESTERN MADE WORK SHIRTS
CHICAGO

Remarkable Forage Plant

(Continued From Page 10)

thus used will equal it in yield and palatability."

"The earliest reports of this grass as a fodder-plant," says an African governmental report, "allude to it as being one of the best fodder-grasses for cattle. Colonel Napier and Mr. Kenny found that both cattle and horses ate it readily."

California ranchers are coming forward with enthusiastic testimony to the same effect. A rancher for 6 years secretary of the San Jacinto Valley Chamber of Commerce, writes that he fed it both green and dry to both horses and cows. He says, "Cattle will pick it out, every particle of it, before eating alfalfa. We also mixed it with hay for horses and they prefer it to oat and barley hay. A neighbor had two goats and in his yard were Kaffir corn, Sudan grass, alfalfa and a lawn, and every time they would get out of their pen they would jump a 3-foot picket fence and go to the Napier Fodder, not stopping even to taste the other feed."

Some California Reports

H. F. Wagner on his Descanso ranch has fed Napier Fodder green, as hay and as silage. This silage test is the only one available to date and was made with two lots of pigs, one at Descanso and one at Lakeside. In both cases the hogs, although fed well in advance, devoured it greedily. A man who tried the grass last year states that he has been a rancher in California for 25 years and writing from Halleck, in San Bernardino county, says: "I think it is the most wonderful forage plant I ever saw. I believe hogs will grow and get fat on it alone." A man from Gardena writes that he fed it to his cow green and dry and that she left alfalfa hay for it in either case. A Pacific Beach farmer states that he has tried it for goats, pigs, rabbits and chickens, and that in every case the animals took kindly to this newly imported alien.

Reports of this nature are accumulating so rapidly that the question of palatability seems to be thoroughly established. Naturally, the question of nutritive value is of equal importance to the stock man. As yet the United States Department of Agriculture has given out no analysis of this fodder excepting the one furnished by the Rhodesian Department of Agriculture. The African reports include several analyses, giving a comparative analysis with that of sugar cane, both green and dry, and also an analysis of the ash. In republishing the analysis of green Napier Fodder, the U. S. Department has substituted a comparison of green corn instead of sugar cane. All three are given below:

	Napier Fodder Fresh	Sugar Cane Fresh	Green Corn
Water	61.81	75.63	79.03
Ether extract (fats)	.29	.22	.5
Protein	2.92	1.27	1.7
Carbohydrates	17.29	17.23	12.0
Fiber	14.77	5.32	5.8
Ash	2.92	1.83	1.4

Culture of the Crop

As the University of California Agricultural Department is doing active research and experimental work with Napier grass it is probable that new analyses will appear in another season from this source, and these will, it is hoped, include an analysis of silage.

In the propagation of Napier grass its prolificacy appears again as a distinct asset. Napier Fodder is a simple and inexpensive crop to establish. Root shoots from the parent plant, or joints of the mature canes take root readily in warm, moist soil, and stool out with great rapidity, from the first. The U. S. Department of Agriculture cites a case in Africa where a farmer produced 7000 plants in a single year from a start with three. Judging from many California experiences this record seems quite possible of attainment by anyone who diligently uses the methods of root division, suckering and cane cutting.

In field culture probably a number of new methods will develop. Eugene Spencer of Los Angeles has tried burying canes lengthwise, end to end, in furrows in the fall, and reports that they have sprouted from each joint in the early spring. A distance of about 3 feet apart each way is the usual rule for setting out roots or cuttings.

The time to plant is of importance, as Napier grass is essentially a warm weather plant. Cuttings or roots set in cold damp soil will often rot. A safe rule is to wait until all danger of frost is past. Much is to be said in favor of fall planting. In fact its general adoption is quite probable, though plants may be successfully started at any time through the summer months.

Mr. Spencer is planning to set out 1,000,000 cuttings on his Antelope Valley ranch in May. He experimented first with the grass in his back yard in Los Angeles, and from the few clumps raised from the seed, which he originally secured from Australia, sold hundreds of cuttings. The phenomenal growth of the plants in his city yard aroused great interest

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Land-Hungry Poor Man

(Continued From Page 14)

Such a policy of State aid to settlers is not new. It has been tried successfully by Great Britain, Denmark, Norway, Sweden, Germany, Russia, Austria, Italy, the six Australian States, New Zealand, British and German South Africa, Brazil, Venezuela and Uruguay. It is the best way of utilizing the credit of the State which sound development establishes. It is a boon to the individual, and the individual's success is an asset to the State. The benefits, therefore, are decidedly mutual.

An effort has been made in the United States to meet the need for a more liberal financing of farming operations by the establishment of the Federal Land Bank which loans money on the amortized plan over a period of years at 5½ per cent interest. More than $150,000,000 has been loaned so far. But, although this assistance has proved to be a decided help to thousands of land owners, it does not meet the problems of the new settler. Only those who own at least fifty per cent of the appraised value of the land can take advantage of the opportunity to get money at low rates for a long period of time from the Federal banks. A very small percentage of the returning soldiers will have capital sufficient to pay 50 per cent of the value of land which they may wish to buy. Some better means, such as the arrangement for aiding the settlers at Durham, therefore, must be provided.

Advantages of State Aid

In addition to furnishing liberal credit, the Land Settlement Board is in position to sell land at a price much below the present selling value of other land in the community. This is due to the terms of purchase made possible by the guarantee of success which the State could offer when buying the tract and to the fact that the State looks for its profit to the improved social conditions of the community rather than to any financial gain. The overhead charges for advertising have been unusually low, while the commissions on sales, which in private colonization schemes in California have run as high as 40 per cent of the original value of the land, have been eliminated entirely. The terms granted the settler make the price of land which runs from $48 to $235 per acre a very light burden for him to carry.

The cost of improvements is greatly reduced by the service which the Land Settlement Board offers in preparing land and in the construction of buildings. A tractor and an efficient land grading outfit costing from $6000 to $8000 are obviously beyond the reach of the small farmer. The construction of a house also presents difficulties to the ordinary farmer.

When these tasks for which the farmer is not prepared are done for him he can devote his time to the essentials of his business and rest assured that the development work will be done better and more economically than if he had undertaken it himself. In addition to these advantages the purchase of materials in large quantities and for cash by the Land Settlement Board enables the settler to get material at the lowest possible cost.

No Unproductive Land

Good soil was recognized as essential to the success of the colony; therefore, the advice and active assistance of the soil experts of both the University of California and the U. S. Department of Agriculture were sought by the board. The land selected is in a rich farming section of the State where both fruit raising and general farming are successful. The soil ranges from a black adobe to a sandy loam, the predominating type being a rich clay loam. Here again the advantage of State aid is emphasized. The unfavorable soil conditions, hardpan, alkali, infertile sands and impervious clays which have shattered so many dreams of rural contentment have been avoided. The incentive of the private colonization companies to select poor soils because of the opportunity they provide for greater profits is entirely absent in State development, where the only object is to create a successful rural settlement.

The type of agriculture, and therefore, the size of holding, often varies with the type of soils. Some soils are adapted to grain or stock raising while other types can be intensively farmed. Instead of being of uniform size, therefore, tracts of land in the colony at Durham vary from 8 to 300 acres, depending entirely upon the adaptability of the land and the type of agriculture to be undertaken. The size of these divisions has been determined upon the recommendation of those who have made farm management a study. The U. S. D. A., through its office of farm management, has made studies of returns on hundreds of farms of various kinds in all parts of the country and through this work has accumulated valuable data applying to this fundamental

(Continued on Page 36)

The Deserted Homestead Cabin

By Jason Wells

FORLORN reminder of a settler's dream,
Its shattered panes reflect no cheering gleam
Of friendly light. A creaking, wind-warped door
Swings dismally, while 'neath the splintered floor
The pack-rats run. Ah, many a year is flown
Since Courage builded there; the children grown,
Who romped and played about those hand-hewn logs,
And gone the playful pack of mongrel dogs.

INSTEAD of friendly bark—the lone wolf's howl;
Instead of busy hen, the prairie-fowl;
Where once grew flowers, a clump of dusty sage.
(Reward was not this desert farmer's wage.)
Except, perchance, a traveler, tired and worn,
No human being seeks those rooms, forlorn,
For drifting snow, through ugly, gaping holes
In ancient thatch, bends low the slender poles.

YET hearts were high with hope and love was bold
Before the days when cheerful hearth grew cold.
And brave the man, and true, who with his hands
Alone piled up those walls upon the sands,
Who with his trusting, happy helpmeet dared
To wrest a living where no man had fared.
But Sorrow, Pain and Grief, and even Death,
Abided there while still fond Hope drew breath.

DESERTED, yes—but rhythmic romance crowds
Its every nook, and in its tattered shrouds,
There lurks the evidence of valiant deeds—
A hint of rude and rigid desert creeds.
If things could speak, those jagged chunks of lead
Embedded in the walls could name the Dead
Who lie near-by, and every log impart
A secret that is locked within its heart.

Four sound horses cost as much as a Maxwell Truck

AND the Maxwell will outwork three good teams. It feeds as it runs. Puts in a net day's work and piles up no expense. It will carry and fetch a thousand miles for a thousand hours at a stretch. No wagon can keep up with it—weather can't hold it indoors. Never founders or flounders and never has a "Blue Monday" or glanders. No animal or machine its equal for willing and competent service.

Does more work, more sorts of work, more hard work, more often under more unfavorable conditions than any carrier.

Designed for the heaviest hauling and the hardest mauling.

The Maxwell goes farther and faster than the biggest truck and travels where they can't. 2400 pounds. Only one farmer in ten ever needs a heavier machine and at that only one time in ten. Farmers the land over are operating Maxwells because it answers every average purpose and costs least to own and least to operate.

The same type of worm drive which $5000 trucks advertise as their great feature. $5000 truck construction and sold with a $5000 truck guarantee. 10-foot loading space. Electric lights and generator. Chassis $1085 f. o. b. Detroit.

Pays its way from day to day.

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You Can Control Thrips *Now*

You can control thrips without injuring your buds or fruit. It's a mistaken notion to think that spraying for thrips after your trees have blossomed is injurious. The trees won't stand a very strong spray, but

With

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you have an effective, non-injurious spray. It mixes readily with water and has great spreading and penetration qualities. You can use it when the trees are in full bloom or after the blossom petals have fallen. It kills thrips in the egg or larva or adult stages.

Paul R. Jones, our entomologist, is a thrip specialist, for many years with the Government. His services are free to you. Don't hesitate to write him in care of

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Bulk Grain Handling

BULK handling of grain is growing in favor in California and promises to be widely adopted this coming season. The actual demonstration of the value of handling grain in bulk, as contrasted with the method of handling in sacks, has been made in numerous places throughout the grain-growing districts of California in the last year. From the northern reaches of the Sacramento Valley, on both the eastern and western sides of the river, south to the Tehachapi range, a progressive grain farmer here and there last year began handling his product without bags. And here and there an occasional big operator built special warehouses with grain bins or erected expensive reinforced concrete elevators.

It is estimated by experts that in excess of 10 per cent of the wheat and barley raised in California is lost to the world's food markets by reason of handling and storing in sacks. These losses are traceable to a number of sources. As everyone knows, the grain sacks leak and a great amount is lost through the working of the small berries through the fabric. A little cut or tear occurs and nearly the entire sackful spills away during the operation of transferring it from pile to warehouse or from warehouse to railway car. Rats, mice and other vermin have easy picking when grain is stored in sacks. This food supply for the rodents adds to the growing plague that destroys so much valuable material annually.

Fire and weather damage to grain stored in bags is excessive and forms a large part of the annual grain loss charged against the sacking method. Theft of grain so handled is, moreover, an easy matter, especially when, according to the time-honored, careless California practice, the sacks remain for days and weeks scattered on the fields, as the harvester left them, or in straw-covered piles by the roadside.

Now that terminal, elevator, warehouse and shipping facilities are being provided for the storage and movement of bulk grain, there seems to be little doubt that the next few years will witness the adoption of the bulk method by California, as a State, and the conversion of this, the last great grain section to maintain the use of bags, to the more progressive system used in other States and countries.

A Handy Tool

I find the device known as the "burr safety lift" a great convenience around my place and would not be without one. This article is sold by most supply or machinery houses. It is a block and tackle, with a locking device that holds securely even wet, greasy rope, making it possible for one man to lift heavy carcasses or well-pumps, load and unload wagon-beds and racks, stretch fence, put away hay and innumerable other things. I have used it to pull a stalled wagon out of the mud by means of one horse. The rope, which was attached to the tongue of the wagon, was run through the double block and tackle, anchored to a post beside the road, and thence taken to a single tree.—W. H. M.

Wiring Fruit Trees

WHILE in our locality it is customary to use wooden props to support the branches of heavily laden peach trees, I have been told that it is possible to use wires, stretched from limb to limb, held by staples driven into the branches. I have heard different opinions as to the effect on the wood. Some orchardists state that gum will ooze from the tree at the point where the staple is driven in and that rot will ensue in that branch. Will the use of staples injure the branches; if not, what is the best time of year to drive the staples?—Walter Kynosh, Marysville, Cal.

Reply by Robert W. Hodgson

I have not observed very much wiring of deciduous fruit trees; in fact, do not think it a general practice. It is quite a common practice, however, to wire citrus trees, especially those of the Valencia variety. All sorts of methods have been used for supporting the limbs under the trees of heavy loads of fruit, including props as well as various other means for holding the trees up.

The most successful method and the one most commonly used in Southern California at the present time is wiring, using eye screw heads to hold the wire. These are screwed into the limbs on the upper side and the wire is attached directly to them. The limbs grow around the screw heads and the metal does not cause any particular damage. Of course any injury to a tree is apt to lead to more or less gumming, but this is not a serious indication. It is, of course, very undesirable to wind the wire about the limb as this ultimately results in girdling and the probable death of the limb above the point of girdling.

Various forms of supports in the way of sleeves also are on the market at the present time, but this simple method of using eye screw heads is by far the most practical. Staples have been used also, and with a certain degree of success, but the preference seems to be for the screw. The usual time for propping the trees is sometime prior to the stage when the fruit begins to weigh up. It of course can be done at almost any time of the year and frequently is left to periods when there is little other work of a pressing nature.

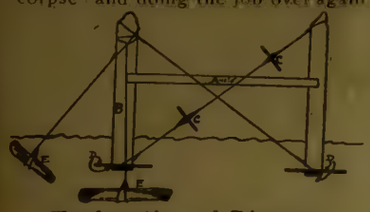
A Cheap Paint

Prof. J. W. Gilmore of the University of California is the authority for the statement that a stain made of equal parts of crude oil and kerosene makes an excellent dressing for outbuildings, fences and all raw structures. The kerosene in the mixture gives it penetrating power and it is all the better when applied during the heat of the day.

"I have used this material on occasions for the past ten years," reports Professor Gilmore, "and find it possesses excellent qualities. The mixture at the present price of crude oils and kerosene is made so cheaply that one can afford to apply it as a spray; on the roofs and flat surfaces it can be applied with a broom with a saving of labor. The result of this treatment after the mixture is dry is a soft brown color that harmonizes well with the greens and yellows that prevail in the country."

Fencing Pointers

THE use of a large number of "dead men" or buried anchors in fence-building is a simple, but often overlooked method of making the fence-line rigid and substantial. These buried anchors are especially useful along a long stretch of fencing. Double "dead men"—that is, one planted on each side—make good braces for corner posts. In burying anchors, I always use several thicknesses of wire; it is better to use a little extra wire than to have a break that will necessitate digging up the "corpse" and doing the job over again.



Explanation of Diagram

A—4x4 cross-brace mortised into posts; B—Corner post; C, C—Sticks used for twisting brace wires; D, D—Cleats on bottom of post; E, E—"Dead men" or anchors buried in ground.

A good method of bracing corner posts or gate-posts that may be used in conjunction with dead-men anchors is here illustrated. The posts should be extra large and sound, and it is a good idea to nail cleats across the bottom to make them unusually solid. They should be set deeper into the ground than the line-posts. The two posts are notched for a 12-foot 4x4, or pole, which is spiked horizontally between them. They are then drawn together by means of a heavy twisted wire, as indicated. If desired, two wires may be used, crossing in the form of an "X."

Barbed-Wire Precautions

In using barbed wire, it is a good idea to go along the line behind the stretchers and look for kinks or weak spots, due to coiling, overstretching or stapling. It is usually at such points that breaks occur when changes in temperature cause contraction and expansion. Many a fine farm animal has been lacerated by stepping into a coil of wire which had broken and rolled up under just such circumstances.—W. H. Moore, Dorris, Cal.

A Sure Engine Starter

To Orchard and Farm:

Here is a method of starting gas engines on cold mornings that "does the trick" every time.

Get a compressed gas tank (such as is used for acetylene lights on automobiles). Attach one end of a small hose to the outlet valve and insert the other end in the air chamber of the carburetor or in the manifold. Then turn in about as much gas as you would use for lights and, with a good hot spark, the engine will go every time. If you have an old tank on hand, it can be put to good use this way; it will even pay to buy a new one if you experience much trouble, for it is a sure starter.—F. W., Santa Ana., Cal.

Farm Bureau Membership

Eighty-five per cent of the farms of California are now included in the farm bureau system organized by the U. S. Department of Agriculture and the State college of agriculture. Land settlements and colonization enterprises in the more thinly settled counties probably will require that the system be extended. The 20,000 members of the farm bureaus have been answering the requests made upon them by the Federal Government during the war and are prepared to go forward this year to meet the necessities.

The Farm Repair Shop

A SMALL farm shop, equipped to handle the simpler repairs, will soon pay for itself. As a rule, it actually saves money, returning its original cost rapidly. The shop need not be equipped with expensive tools; some of the handiest shops have been installed at very reasonable prices.

The greater part of many rainy days can be spent in putting the farming implements into good condition. It doesn't require much shop equipment to make welds and bend rods. A forge, anvil, vise, tongs and hammer will do it. With these tools for a beginning, others can be made. Old machinery ready for the junk heap can be rescued and handy tools made from its steel. Chisels of all shapes and sizes, "S" wrenches and the like can be shaped from the old steel and tempered to suit any use. Tongs of any size and shape may be made from the wrought iron parts. Old files can be made into useful tools.

Add to the equipment a press drill and many visits to the village blacksmith will be forestalled. The best thing about having a shop is that the more it is used, the more proficient the operator will become. Results at first may be disappointing, but the farmsmith can soon develop a proficiency in handling the common repairs. There's something rather satisfying in the knowledge that should a machine break down on the job, the materials, tools and ability are ready to make the necessary repairs.

Gasoline in the Wood Lot

Greatly increased activity in the use of standing timber, especially that of the farm wood lots, has resulted during the past few years from the fuel shortage and the general conservation movement. As a result, hundreds of farmers now own portable drag saws. As compared to the old, back-breaking cross-cut saw the power drag is like the modern reaper compared to the scythe.

And many improvements have been developed since the first saw, a two-cycle machine, was put on the market in 1912. The greatest improvement on this original invention was a clutch for "divorcing saw from power" so that the engine could be started without running the blade. And now we have a four-cycle machine with clutch and automatic governor, making the engine available for use on other work by the employment of a pulley.

The new four-cycle machine weighs but 10 pounds more than the old two-cycle, and uses only two-thirds as much gasoline, according to the reports of engineers.

In land clearing operations the drag saw is figuring prominently. A tractor and such a sawing outfit make short work of uprooting forest giants and converting them into cord-wood or other salable pieces. Through the medium of such efficient equipment, at a time when wood was selling for high prices, hundreds of acres of land, especially in the northwest, have been cleared and put into crops the same year, the sale of the wood paying the cost of clearing. A piece of timbered land no longer offers formidable obstacles to the owner, for as in most of his other farming operations, his willing "genie," gasoline, is ready to do the work.

To Hold Bearings

While putting an axle or shafting in place, ball-bearings may be held in their sockets by placing a little cup grease in the socket or ball-race. The bearings will stick in the grease until the work is finished.—W. H. M.

Choose the Dealer First Then the Piano

A good reliable Piano Dealer will only offer dependable pianos. Their names may be unknown to you, but his name is not. If he is known as a good reliable dealer, then you are safe—you can rely upon his statements and his advice—and your choice of a Piano will give you many years of satisfaction.

We invite you to call at any of our stores—or write us asking for illustrated catalogs and prices.

We are dealers in Steinway and other Pianos, Pianola Pianos, Aeolian Player Pianos, Player Music, etc.

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Stores also at Vallejo, Portland, Seattle, Tacoma, Spokane.

Rheumatism

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

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All those suffering from this "sugar sickness" send your address for information on Diabetic flour for making bread, biscuits, muffins and cookies—entirely free from starch and sugar and good to eat.

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Texas school lands for sale by the State at $2 an acre, 5c an acre cash, and no more for 40 years, but 3 per cent interest; send 6c postage for further information.
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TALK about smokes, Prince Albert is geared to a joyhand-out standard that just lavishes smokehappiness on every man game enough to make a bee line for a tidy red tin and a jimmy pipe—old or new!

Get it straight that what you've hankered for in pipe or cigarette makin's smokes you'll find aplenty in P. A. It never yet fell short for any other man and it'll hand you such smokesatisfaction you'll think it's your birthday every time you fire up! That's because P. A. has the quality!

You can't any more make Prince Albert bite your tongue or parch your throat than you can make a horse drink when he's off the water! Bite and parch are cut out by our exclusive patented process!

You just lay back like a regular fellow and puff to beat the cards and wonder why in sawmill you didn't nail a section in the P. A. smokepasture longer than you care to remember back!

Buy Prince Albert everywhere tobacco is sold. Tappy red bags, tidy red tins, handsome pound and half pound tin humidors—and—that clever, practical, pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

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Also called Tetter, Salt Rheum, Pruritus, Milk Crust, Water Poison, Weeping Skin, etc.

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Eczema Specialist
for 40 Years.

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If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

Free Farm Building Plans

The blueprint plans of farm buildings and equipment listed below have been prepared in connection with the experimental work carried on by the Division of Agricultural Engineering in cooperation with other divisions of the California College of Agriculture. The plans are not issued as experimental propositions, but contained practical profits in the construction of buildings adapted to California conditions.

The Agricultural Extension Division has taken over the distribution of these plans and will furnish them to farmers without charge. Order by number and address correspondence to: Agricultural Extension Division, College of Agriculture, Berkeley, Cal.

BEEF CATTLE

Beef Cattle Barn for Feeding Hay—[illegible]

Farming Chute for Cattle—[illegible]

Stockyard Gate With Latch Operated From Horseback—[illegible]

Feed Bunk for Feeding Silage to Cattle—[illegible]

DAIRY CATTLE

California-Type Milking Barn—[illegible]

California Milk House—[illegible]

Movable Feed Rack for Cattle—[illegible]

Standard California Milking Barn for 100 Cows—[illegible]

Small Milking Barn for Ten Cows—[illegible]

Beur Fisher Type Dairy Barn—[illegible]

Hollow Tile Milk House—[illegible]

Concrete Milk Cooling Vat—[illegible]

WORK STOCK BARN

Work Stock Barn for 16 Head—[illegible]

Work Stock Barn With Hay Mow in Center—[illegible]

GENERAL BARN

Small General Purpose Barn—[illegible]

Hay Storage Barn—[illegible]

SWINE

Community Hog House, "Iowa Type"—[illegible]

"Davis" Movable Hog House—[illegible]

Self-Feeder for Swine No. 2—[illegible]

Self-Feeder for Swine No. 1—[illegible]

Hoof-Trimming Crate for Swine—[illegible]

Concrete Dipping Vat for Hogs—[illegible]

Breeding Crate for Swine—[illegible]

Stripping Crate for Swine—[illegible]

SHEEP

Movable Feed Rack for Sheep—[illegible]

Feed Rack for Sheep—[illegible]

Improved Movable Feed Rack for Sheep—[illegible]

Portable Manger—[illegible]

Lambing Hurdle—[illegible]

Sheep Dipping Vat—[illegible]

Portable Feed Bunk for Hogs or Sheep—[illegible]

(Continued on Back Page)

1-inch material. Can be used for cleaning out irrigation ditches of grass and weeds by sheep.

POULTRY HOUSES

Movable Poultry House—B-10, 6 sheets. Shed roof type, 8x10 feet. Built on runners. Good construction, full details of framing roost, nests, etc.

Shed-Roof Poultry House—B-51, 6 sheets. Size, 16x20 feet. Details of construction.

Knock-Down Poultry House—B-57, 4 sheets. Sides, roof and floors are separate pieces; can accommodate 6 to 10 hens. Full construction details, including runway.

IMPLEMENT SHED

Farm Implement Shed—C-33, 1 sheet. Size, 248x42 feet. Roof, without side walls.

SILOS

Monolithic Concrete Silo—C-35, 2 sheets. Size, 18x48 feet. Capacity, 300 tons.

FARM HOUSES

A Four-Man Bunk House—A-42, 3 sheets. Size, 14x30 feet, with porch. Plan and elevation, two bedrooms and bath.

Four-Room Bunk House—C-72, 2 sheets. Size, 20x28 feet. Single rooms with sleeping porches, 5 feet 8 inches by 9 feet 8 inches; ventilation in center. Hip roof, frame construction with rustic siding.

Four-Room Farm Bungalow—C-91, 4 sheets. Size, 22x33 feet. Living room with fireplace. Two bedrooms with sleeping porches. Kitchen in northeast corner.

MISCELLANEOUS

Septic Tank for Ten People—B-31, 1 sheet. Single chamber type; made of concrete. Details of tank and forms.

Power Attachment for Ford Automobile—B-44, 2 sheets. Good for six horsepower at 800 revolutions per minute.

Seed House for Sorghums—C-79, 1 sheet. Size, 8x12 feet. Capacity, 960 heads or about 300 pounds. Concrete floor. Several ventilators on sides and roof. Space provided for germination test.

Frame Water Tower for 5000-Gallon Tank—C-32, 1 sheet. Size of tank, 12 feet in diameter and 6 feet high; 22 feet above ground. Tower made of 8x8 posts, anchored to concrete piers with metal straps.

Rabbit Hutches—C-83, 1 sheet. Three stories high. Can be built any desired length. Size of pens, 3 square feet, 18 inches high. Sloping floors, draining into trough.

Device for Placing on and Removing Wagon Racks—E-89, 1 sheet. Size, 7x18 feet. Perspective drawing giving sizes and dimensions.

Farmstead Group, Suitable for a 40-Acre Dairy—C-90, 1 sheet. Comprises ten buildings; rectangular arrangement, covering 2.9 acres. Buildings grouped around a central court.

Detailed Plans of Molds for Making Concrete Blocks, Troughs and Walls—C-34, 1 sheet.

Lock for Box Stalls—B-46, 1 sheet.

Bean Cutter, Sled Type—B-87, 1 sheet.

Might Have Been

If the ten billion pounds of explosives used destructively in Europe during the war had been used constructively to eliminate stumps, boulders and swamps instead of men and buildings, there would have been enough to clear and drain about one hundred million acres of land now unproductive, or about two-thirds of the area which Secretary Lane estimates could be made tillable by these methods in this country.

One Man Harvests 40 Acres a Day with this Outfit

MOLINE UNIVERSAL TRACTOR

and the new Moline 10 Foot Grain Binder

This new Moline 10-ft. tractor binder attached to a Moline-Universal Tractor running 3½ miles per hour, with one man in control of both tractor and binder, will cut 40 acres of grain in a ten-hour day. This is more than 2 men and 8 horses with two 8-ft. binders can do; and more than 3 men with any other tractor pulling two 8-ft. binders can do.

Considering the amount of work it will do, and the saving in expense, the Moline 10-ft. binder is the lowest priced binder ever made, and it will last twice as long as any other. But of greater importance is the fact that you can now harvest your grain when it is ready in half the time you ever did before—this may save you the price of the entire outfit any rainy season.

The Moline 10-ft. Binder is made to work with the Moline-Universal Tractor. One man controls both tractor and binder from the seat of the binder. The entire outfit is easily and quickly backed to turn square corners so that a full width of cut can always be maintained. The new Moline Binder is constructed heavier throughout and has much greater capacity than any horse drawn binder.

Equipped With Hyatt Roller Bearings

Important bearings, 32 in all, are equipped with Hyatt roller bearings. These bearings double the life of the binder, allow it to run at much faster speeds, make lighter draft and require only one oiling a season. This feature alone saves one hour or more a day. Elevator gears are enclosed and packed in grease. There are many other features about this binder which enable you to harvest faster, cheaper and better than you ever did before.

A header attachment is provided so that the Moline Binder can be easily, and at small expense, converted into a header.

If you have only 20 acres of grain to cut, it will pay to own this outfit. You will pay for binder cutting your own and neighbor's grain.

Moline Tractor Works Year 'Round

After harvesting you can use your Moline-Universal Tractor to run a small separator and do all the threshing in your neighborhood. There is no end of uses for the Moline-Universal Tractor. You can plow, disc, seed, cultivate, mow, harvest, etc., and do all your belt work with it.

The Moline-Universal Tractor does all farm work *including cultivating*, and one man controls both tractor and implement from the seat of the implement.

Thousands of farmers in all parts of the country are proving every day that the Moline-Universal is the most practical, economical and efficient tractor made, that it practically doubles a man's results and reduces expense.

It will pay you to use the Moline-Universal Tractor and Moline Grain Binder this year. See your Moline Tractor Dealer now or write us for full information.

Moline Plow Company, Moline, Illinois

Manufacturers of Quality Farm Implements Since 1865

Calf Enemies

WHITE SCOURS BLACKLEG

Your Veterinarian can stamp them out with **Cutter's** Anti-Calf Scour Serum and **Cutter's Germ Free** Blackleg Filtrate and Aggressin, or **Cutter's** Blackleg Pills.

Ask him about them. If he hasn't our literature, write to us for information on these products.

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"The Laboratory That Knows How"

Federal Farm Loans

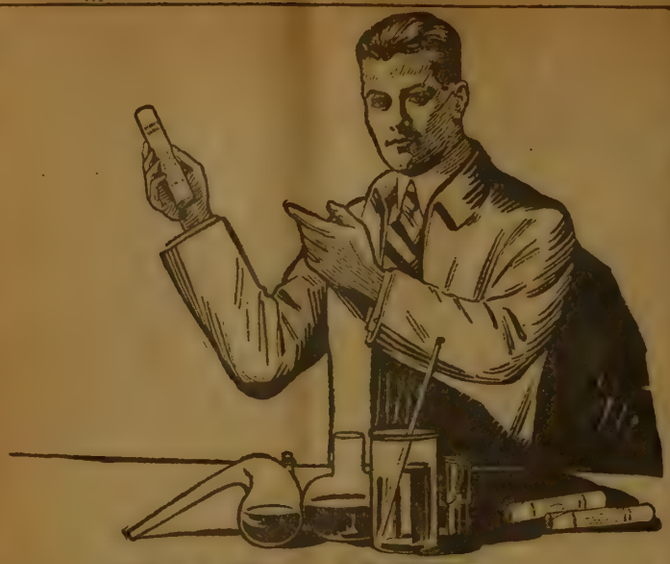
LONG TERM LOW RATE

All loans made on an amortization plan whereby the borrower repays the principal gradually with each interest payment.

Over three thousand satisfied borrowers in this district. It will pay you to investigate.

For information apply to the nearest NATIONAL FARM LOAN ASSOCIATION or write direct to

The Federal Land Bank of Berkeley, California



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"genuine GIANT is always uniform"

At every Giant Powder plant the chemical laboratory controls the processes of manufacture. They make continuous tests that insure the unvarying high quality of Giant Powders. Each pound of Giant Powder is exactly like every other pound of the same grade. Such uniformity means economy, efficiency, safety. Professional users of Giant Powders—miners, quarrymen, contractors—all know that the name "Giant" stands for utmost dependability in explosives.
When you have land to clear, trees to plant, subsoil to be broken or ditches to be blasted, tell your dealer to get for you one of the Giant Farm Powders—Eureka Stumping or Giant Stumping. Don't accept any ordinary dynamite, but insist on genuine Giant Powder, bearing the Giant trade mark on every box.

A postal will bring you our book, "Better Farming with Giant Farm Powders." Its 52 pages are full of short-cuts and labor-saving methods.

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STUMPING FARM POWDERS EUREKA

Insure your Home And NOT your Orchard WHY?

ONE IS FULLY AS IMPORTANT AS THE OTHER

CARCO KILLS ORANGE GRAY SCALE, THRIPS AND RED SPIDER at LESS than ONE-HALF the cost of any other material. We GUARANTEE no damage to the foliage on citrus trees. Can be used ANY TIME of the year. A trial order will convince you.

SPRAY WITH "CARCO"

Then You are Properly Insured

Price by the drum (50 or 57 gallons), $1.50 per gallon.
5-gallon lots $1.75 per gallon. Smaller lots in proportion.
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One gallon of "CARCO" will make from 100 to 150 gallons ready for application—according to strength required. Write for our book, "Useful Hints for Spraying." It is free.

State Agent ARTHUR CANN 198 S. First St. San Jose, Cal.

If you have something to sell or trade, why delay? A small Classified Ad in Orchard and Farm will complete the deal. The cost is small.

An Apple Show and What Followed It

The deeper significance of agricultural exhibitions is not always recognized. In Humboldt County the first apple show brought a realization of what potential wealth existed in that section, as well as a determination on the part of the growers to organize for their mutual welfare. Now watch Humboldt County prosper!

By J. A. Robson

FOLLOWING the trend of the times which, since the war, has demonstrated as never before the value of co-ordinated effort both in the production and marketing of produce, the orchardists of Humboldt County have formed two associations for their mutual benefit and for the future development of the business in Northwestern California. The first of these organizations is the Humboldt Apple Growers' Association, the second the California Apple Show Association.

Both organizations were formed at the conclusion of the first annual Apple Show of Humboldt County, given under the auspices of the Board of Supervisors in Eureka last fall. The exhibition was arranged by the county officials for the purpose of demonstrating what is already being accomplished in a horticultural way in a region generally regarded as being given over almost exclusively to lumbering and dairying. However, it served the added purpose of lending inspiration to the orchardists for greater and more concerted effort in raising and marketing their produce.

When the organization of a co-operative and marketing association was suggested, the growers were a unit for its formation. Many of them were surprisingly familiar with the subject and ready for the new order of things.

State Commissioner Hecke is authority for the statement that the Humboldt section is peculiarly adapted to the raising of fine apples and holds the promise of attaining first place in the production of this species of California fruit. There are two reasons why this is so: Suitable soil and excellent air and water drainage. Air circulation is quite as important in the production of fine apples as adequate soil drainage, and both of these are provided by the broken topography of this section. The finest apples in the world are found in mountainous regions where the air currents, sweeping down from higher altitudes, create heavy draughts. The Rogue River Valley apples, which have won national recognition for flavor and keeping qualities, ripen into maturity in the cool breezes that flow down from the snow-capped peak of Mount Hood. The same conditions that exist in Southern Oregon are also found in the Humboldt section, where apple raising has been engaged in successfully for many years. In the southern part of the county particularly, where the apple orchards have long since reached a commercial size, the raising of this species of fruit has been carried on scientifically for a number of years under the direct supervision of Horticultural Commissioner Benton. The result is that the Humboldt apple is free of scale and worms and requires only a standard label and pack to enter into its own as one of the fine apples of California.

What the Show Disclosed

This fact was not fully realized either by the public or by the orchardists themselves until the Apple Show arranged by the County Supervisors brought together samples of the products of all parts of the county. The affair would have been a credit to any district, and it was in the nature of a revelation to the thousands of spectators as well as the men engaged in the industry in Humboldt. From the smallest plate display to the box—rows of yellow, green or red apples, the fruit without exception was of a quality approaching perfection. Quality rather than quantity was the keynote of the exhibition, which because of its influence on the future development of the apple business in Northern California is worthy of a brief description.

The show was held in three rooms adjoining the Humboldt County Free Exhibit in Eureka. The displays were arranged according to coloring in what were termed the Gold, the Green and the Royal Red rooms. Velvet draperies, gold plates and exquisite vases containing flowers of harmonious hue made each of the rooms a beautiful color study in still life. Winter Bananas, Bellefleurs, Yellow and Newtown Pippins were among the varieties of box and plate displays in the Gold room. Rhode Island Greenings laid on a background of green velvet made an excellent exhibit in the Green room. Kings, Spitzenbergs, Jonathans, Duchess and

(Continued on Page 38)

An Attractive Individual Exhibit

At the Eureka apple show. The benefit to the community of such a show is frequently not fully realized until long after it is over. Our story deals with what has since happened as a result of this exhibition.

Sunflowers

"From Him That Hath Not Shall Be Taken Away"

"STOP!" cried the crossing cop. I broke two ribs on my new re-tread and nearly projected my wife through the windshield, as I jammed on the brake, and brought my Rolls-Ruff to a halt.

"Where is your front license-tag?" he queried in ominous tones.

"That I do not know, good sire," was my respectful reply. "But I am even now headed for the nearest glue-pot, in order to stick on the windshield for the sixth time this official red card which was handed me for consideration of one dollar when I lost the metal tag."

"You ain't supposed to keep it under the seat," suggested the officer, getting out his note-book. Having but recently donated $10 to the public treasury for trying to keep up with seven big cars that had passed my jumping-flea, I surveyed this move with no little apprehension.

"But I've had it on the windshield, Mr. Officer," I insisted. "Look! In the prescribed position on the lower right-hand corner of the glass you will observe the tell-tale marks of mucilage, and—"

"No argyment," thundered the lordly uniformed personage. "That there card is supposed to be carried on the windshield. I'll have to report——"

"But I'm trying to explain to you," I remonstrated. "I've stuck it on with liquid glue, and carpenter's glue; with office mucilage and paper-hanger's paste; with tire-tape and adhesive plaster. But it won't stay on. Official rules not-with-standing, red cardboard and glass have absolutely no affinity for each other."

"Don't make no difference," asserted the knight-of-the-star, writing diligently in his notebook, "What's yer name?"

In spite of myself, I fear that I allowed my temper for the moment to get the better of me, and raising my voice unconsciously to a pitch that attracted a vulgar crowd, I said: "You may report me. That's your privilege, even if you choose to abuse it. But I want to know what you expect me to do. I might hold the card in position with my right foot, thus (and I demonstrated by pressing the card with my No. 10 against the lower right-hand corner of the windshield). I might go driving along like that to hold it in place and make a spectacle of myself if THAT would satisfy you, but this isn't that kind of a car. In order to control its delicate mechanism I must have the use of both my feet."

"That's right," commented a member of the crowd of onlookers. "That's the only kind of car you can drive with your feet. With the rest of them you have to use your head." I must confess that I could see little excuse for the loud guffaw which followed this remark.

The officer climbed on the running board. "Drive over to the station," he ordered.

Thoroughly aroused but fully aware by now that no amount of logical argument would penetrate his minute intellect, I silently complied with his request.

That is all, except to recount what the police judge said: "No front license tag and insolence to an officer; twinty-five dollars."

Moral: In case of a similar experience you might try sticky fly-paper!

—HENRY FORDHOOK.

Not Deep Enough

By Lucien M. Lewis

The farmer's son tried "lawin'"
And he tried the ministry;
Then he studied for a "medic,"
Next an author he would be.

But he came back to his father
And, with nary a degree,
Said: "Old man, them darned professions
Is not deep enough fer me."

"Ain't deep enough?" pa snorted.
"Minds like yours is mighty few;
Go out and dig some postholes
Is that deep enough fer you?"

The Green "Hand"

"I went over to the blacksmith shop," reported the new farm-hand from the city, "but the smith said he was all out of the ten-penny clevises you wanted, and asked me to find out if you couldn't use a yard and a half of martingale instead."

Hope We Don't Meet Him

Little Willy Centipede: "Mother, I wish I were big like Barney Blacksnake."

Ma Centipede: "Have patience, my child. Within the next few months you will grow a hundred feet."

Answer Department

"Puzzled and Provoked" writes from Oregon: "What can I do to prevent leakage in my irrigating flumes?"

ANSWER: Turn off the water. If that doesn't do the work, feel perfectly free to write us again.

Co-Operation in the Poultry Yard

(This explains many things)

Henrietta Hen: "I'll give you a confidential tip. Some of the fattest worms I have found this year are over there in Mrs. Jones' new geranium bed."

Paulina Pullet: "Thanks. I'll go right over. And, by the way, one good worm deserves another. If you want some delicious grubs, try Mr. Jones' vegetable garden which he has just planted. There are any number there if you are willing to scratch for them."

So *Tough* That Only the Emery Wheel Can Work It

AMSCO Manganese Steel is not usable for all purposes. Its particular place is where unusual stamina and toughness count.

AMSCO, because of its tough and unyielding qualities, cannot be finished like ordinary steels. The usual finishing processes make no impression upon it. Only the fiercely spinning emery wheel, with its millions of sharp, flinty teeth, can work an AMSCO casting into finished form.

Think what it means to have the important parts of *your* tractor made of a metal so tough that it yields only to the whizzing emery wheel. Think of the dependability—the service—the economy of a tractor so equipped.

AMSCO Manganese Steel is today proving its wear-proof quality on hundreds of crawler and wheel type tractors. It is used on crawler tractors for such vital parts as shoes, links, pins, grousers, lags, spacing blocks, sprockets, idlers, rollers and transmission gears. On wheel tractors it is used for bull gears, pinions, sprockets, wheel treads and transmission gears.

Unless the vital wearing parts of your tractor are tough and long-lived, economical service is impossible. AMSCO parts guarantee maximum service. Select a tractor that specifies AMSCO

NOTICE—We have recently published a booklet, "Tractor Parts," illustrated and done in colors, which will give you some good, practical points and pointers. We're mailing it Free; also a list of tractors fortified with AMSCO. Write us for it.

American Manganese Steel Company

Largest Manganese Steel Founders in the World.
General Sales Office: 1878 McCormick Bldg., Chicago, Ill.

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ARMY

RED CROSS

DELCO

The complete electric ligh

Specified an United States the Re and the

More than four thousand Delco-Light plants were delivered for war work. They were used to supply electric light in camps, storehouses, hospitals, Y. M. C. A. huts, airplane hangars, sub-chasers and other branches of the service.

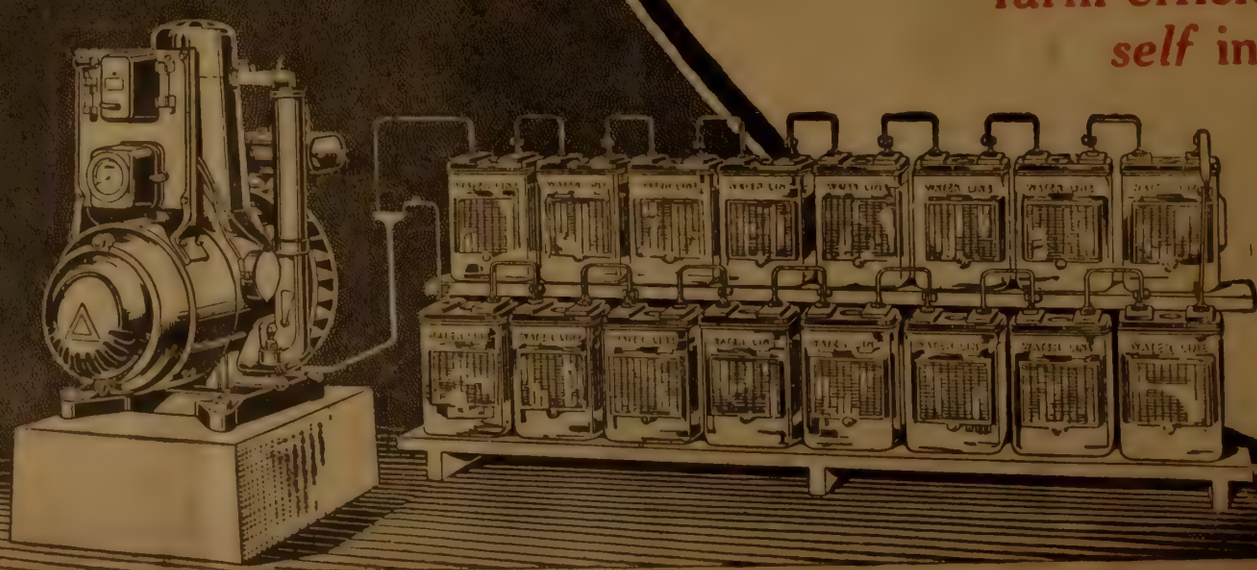
In Red Cross hospitals at the front Delco-Light operated life-saving X-ray apparatus.

Delco-Light was specified by the Government because it is dependable, efficient, simple to operate, requires little attention, and because it is AIR-COOLED.

Delco-Light will work for you, supplying electric light and power for your farm, store or home in the same dependable, trustworthy way that it has for the United States Government—twenty-four-hours-a-day electric service with a minimum of attention.

Over 60,000 Satisfied users all over the country—hundreds of them in this State—know from experience

Delco-Light betters liv farm efficiency a *self* in time



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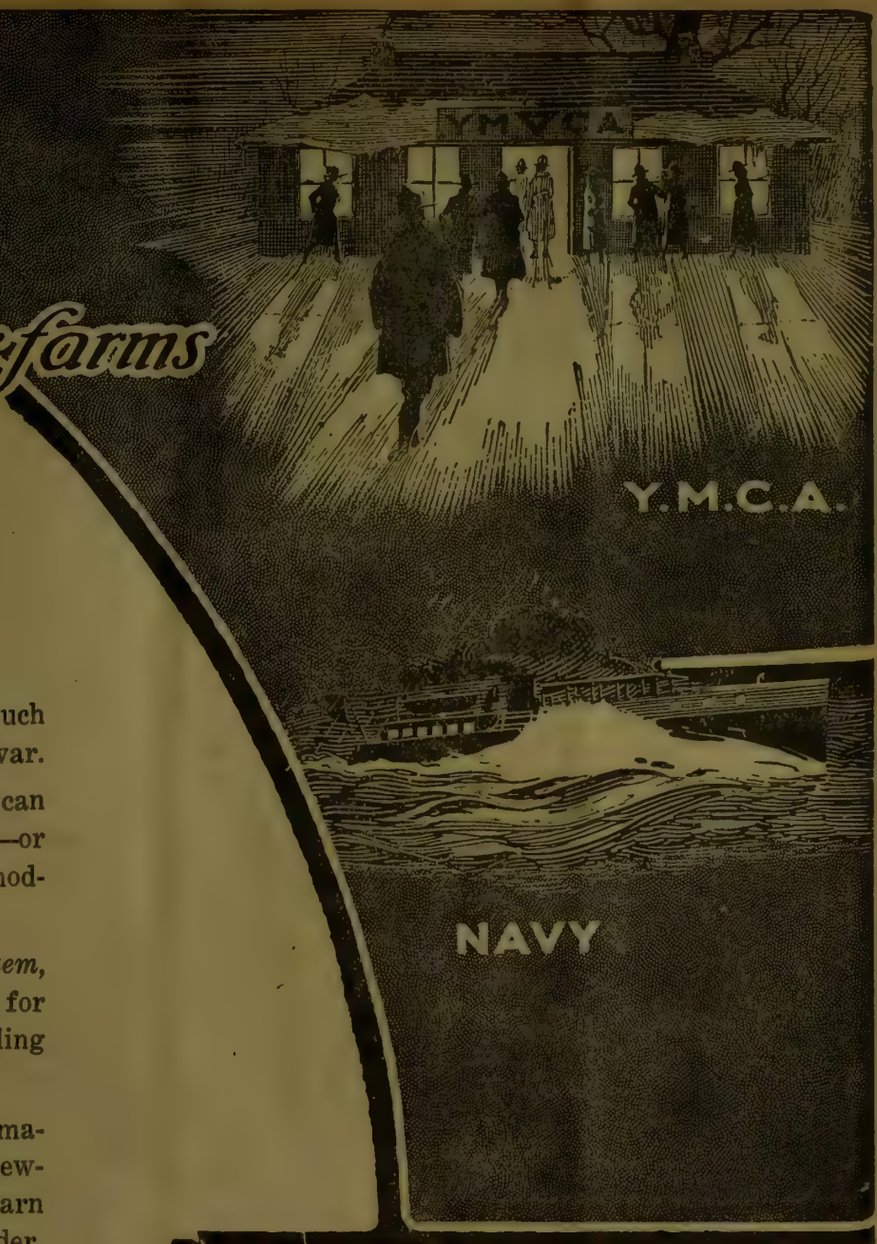

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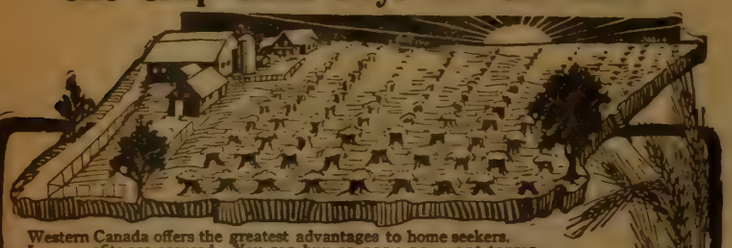

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Selected by Isabel Sinclair

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Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 5 yards of 44-inch material. Width of skirt at lower edge, about 1½ yards. Price, 10 cents.

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2771—Girls' Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. Size 10 requires 3⅛ yards of 36-inch material for the dress, and 1¼ yards for the bolero. Price, 10 cents.

2781—Ladies' Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 will require 4⅝ yards of 36-inch material for the dress, and 1⅞ yards for the jumper. The skirt measures about 1¾ yards at the foot. Price, 10 cents.

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Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42; and extra large, 44-46 inches bust measure. Size medium requires 5 yards of 36-inch material. Price, 10 cents.

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Cut in 4 sizes: 2, 4, 6 and 8 years. Size 6 requires 2⅞ yards of 27-inch material. Price, 10 cents.

2474—Ladies' House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 6¼ yards of 36-inch material. Price, 10 cents.

2783—Child's Undergarment

Cut in 5 sizes: 4, 6, 8, 10 and 12 years. Size 8 requires 2 yards of 36-inch material. Price, 10 cents.

Catalogue Notice

Send 10 cents in silver or stamps for our up-to-date Fall and Winter 1918-1919 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking, also some points for the needle (illustrating 30 of the various, simple stitches) all valuable hints to the home dressmaker.

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Herewith find.....cents for which send me the following patterns:

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Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, [illegible] and [illegible] Angeles. Be sure to sign your full name and address below.

The Home Flower Garden

By Mrs. E. E. Paquette
1118 Polli Street, Ventura, Cal.

CALIFORNIA is so wonderfully blessed with rich fruits and wonderful flowers that I sometimes think we fail to appreciate them as we should. How many of us pass the most wonderful specimens of begonias and fuchias and even the most beautiful geraniums and never give them a thought, when plants of one-third their size and beauty would be prized in the East?

As I looked at our wonderful hedge of poinsettias last Christmas, I thought of the first poinsettia I had ever seen. It was in Colorado; the owner was a lover of flowers, and his poinsettia was the pride of his collection. It was in a ten-inch pot, stood about twenty inches high and had three small blossoms. The largest of the three was almost as large as a saucer. I remember that the Sunday before Christmas we all went to see this "Christmas flower"; we were all bundled in our furs. The pot was on a table in the middle of the room and we walked 'round and 'round the table admiring the flower.

A Striking Contrast

This last year I stood by my row of poinsettias, and again it was the Sunday before Christmas. But what a difference! I was comfortable in a white dress out in my garden, and instead of looking at one bloom I stood with shears in hand and wondered which one of the many to cut first. There were long, straight canes, measuring from five to eight feet, and each cane was topped with a wonderful, brilliant red, velvety bloom, some as large as a dishpan.

"But how do you manage to have such long stems and such large flowers?" Success with poinsettias depends largely on making the right beginning. If you want a good hedge of poinsettias, select a protected, sunny place. If there is some protection from wind, so much the better. Then get your cuttings this month. And, remember, "cuttings," not plants; any good, firm, straight piece of the last year's growth will suffice, and it may be any size from eight inches to two feet in length. I prefer the 18-inch length. Plant just deep enough so the cutting will be held firmly and remain upright. Water it and let it alone.

The cutting will grow and bloom the first year. You may plant a number in different places for specimens if you wish, but for a row, as I have them, you should put the cuttings about two feet apart.

How to Prune Poinsettias

The second and most important step in caring for poinsettias is the pruning. I prune my poinsettias in April or May. I know some growers prune earlier, but I have always had better stems if I prune late. And each year I cut back until there is only from three to six inches of the last year's growth left, leaving just a few good buds on the year-old wood.

Careful study of the accompanying photograph will show that the stems bearing blooms start very low down, showing how I cut them back last year. After the new growth is nicely started, I shall give them a heavy mulch of fertilizer and once a month at least, if not oftener, I shall give the soil around them a good deep soaking. Nature and the California sunshine will do the rest.

These Enormous Poinsettias Were photographed in Mrs. Paquette's garden in December. Are you making the most of this wonderful California winter flower? The accompanying article explains the cultural methods which produced these striking plants. You can have some just as large and beautiful in your garden.

Answers to Questions

Lippia for Lawns

I have a letter asking if lippia is anything like devil-grass. No, indeed it is not. Lippia does, however, make a solid mat covering the ground and, after it is once started, will stand any amount of "tramping." For that reason it is ideal for back yards, under clotheslines, or where children play. It is not like devil grass in any way, and it is claimed by some authorities that it will crowd out devil grass.

You cannot plant the seed. You must get cuttings from some one who has lippia growing, or from some supply house. Prepare the soil as you would for any lawn; then set out the cuttings in rows. Keep well watered and, after it has begun to grow, roll

(Continued on Page 31)

Specifications in Brief

Four-cylinder models have powerful long stroke Elcar Lycoming motor, developing 37½ horsepower at 2100 r. p. m. Six cylinder models have Red Seal Continental 3¼x4½ inch engine. Developing 40 horsepower at 2100 r. p. m. Two unit electrical system. 116 inch wheel base. Road clearance 10½ inches. Full floating rear axle with spiral bevel driving gears. Timken roller bearings front and rear. Double universal drive; tubular propeller shaft: copper cellular radiator. Easy-riding; semi-elliptic spring suspension. Roomy and comfortable bodies of beautiful design and durable finish; new "Cathedral Pipe" upholstering. Equipment complete even to Motometer on radiator.

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HELPFUL HINTS for THE HOUSEWIFE

Edited by Isabel Sinclair

The Home is the Hub of the Universe

"I DON'T believe women are fit to have the vote; that's why I want them to have it." This startling assertion, made some years ago by W. L. George, the great English feminist, was received with mixed feelings by the women whose cause he was expounding.

Analyzing this peculiar and apparently contradictory statement, we find that it is not so unreasonable as it sounds. The meaning that Mr. George intended to convey is this: Only by giving woman the responsibility for political action, can she be made fit to exercise it.

He points out as an example the blacksmith who learns his trade by shoeing horses. With no practice he could never become versed in the trade. Similarly, women who have had no political experience cannot be expected to qualify in advance for an active part in politics; that these same women, however, will quickly adjust themselves to the new order, is certain. For nimble wits and ready adaptability combined with clear intuition cannot fail to bring about the necessary readjustment; and these attributes are inherent in American women.

Suffrage is as truly a sign of the times, dear friends, as the equality and brotherhood of man which is sure to arise from the present world chaos. And I maintain that the woman who asserts herself as an "anti" is merely displaying her short-sightedness and need of study, for I believe that she can be convinced that she is wrong. Not that I favor the prison-martyr, militant type of suffragette; I think she makes a spectacle of herself and harms rather than helps the great cause. There is no reason, however, why a woman cannot be unqualifiedly for "votes for women" and still maintain her womanliness.—Isabel Sinclair.

Home-Made Grape Syrup

To Orchard and Farm:

We make a grape syrup that we consider very fine. We press the juice from the grapes with a cider-press, strain it carefully and then boil until quite thick.

After it is ready to take off the stove, we add one tablespoonful of common baking soda to two quarts of juice, in order to clarify it. This will cause it to foam up. When it stops foaming, we skim it carefully and put it into Mason fruit jars, sealing it while hot, the same as fruit.

We use common Mission grapes. Everyone who has used it pronounces it excellent.—Mrs. Almeda Frakes, Elizabeth Lake, Cal.

Economy in Canning

Various kinds of cans or pails used for shipping lard, lard substitutes or syrup may be used for canning fruits and vegetables.

Choose the container in which the cover fits on the inside and seal the edges with sealing-wax, just as you would the top of a regular fruit-can. These cans are not only airtight, but usually very durable.—Mrs. Ed DeL.

There is apparently no end to the ways of utilizing old stockings. One ingenious woman made a baby's bonnet from two white silk stockings with an interlining of soft padding.

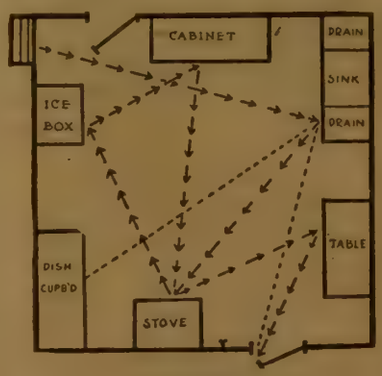
How Many Miles Do You Walk?

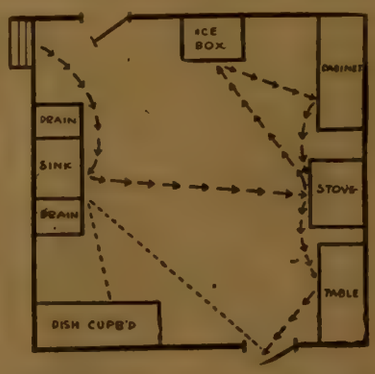
THE average woman wastes a vast amount of energy in useless walking. Her kitchen furnishings are arranged around the wall in such a way that she crosses and recrosses the central floor space from one place to another. Don't cross your tracks, dear friends. It doesn't pay! Just figure out for yourself the order in which you use your kitchen furniture and then arrange it in that order.

In most kitchens it will go something like this:

Materials from the cellar, ice box, cooler or cupboard are brought first to the sink for cleaning, then to the stove for cooking. From the stove they are dished up on the table, and then into the dining room. Then why not work from left to right straight from storage place to serving?

In planning the kitchen we find there are just two main processes in all kitchen work. One process is to prepare the meal, the other to clear it away. Disorganization in the kitchen means wasted energy.





Step-Saving Plans

Standardize the arrangement of your kitchen by placing the equipment (stove, sink, icebox, cabinet or cupboard, table, etc.) in logical order. Material and furniture for clearing away should be arranged with the same object in view.

We have taken for example a kitchen measuring 15 feet by 15 feet in size. We measure the distance traveled in preparing one vegetable, from cellar to sink for the washing, to stove for cooking, to icebox or cooler or cabinet for butter or cream and seasoning, back to stove, to table for dishing up, to dining room. The distance traveled is 75½ feet. In clearing away this one dish the distance traveled is 32½ feet.

In the second diagram we have shown the same kitchen with furnishings rearranged in order to place the equipment used for preparing the meal and that for clearing away in the right relation to each other. The distance traveled in preparing one vegetable with this arrangement is only 52½ feet, and in clearing away only 20 feet.

Miles of Walking

Figuring on this basis that the housewife would prepare on an average five dishes for each meal and three meals a day for one month she should save more than 15,000 feet of walking by having the equipment arranged as in the second diagram. In one year the distance saved in steps would amount to more than 35 miles.

When the furniture has been so arranged that the work may be done with the fewest steps, then study each task and have the right equipment and tools for each.

Is the dishpan below or within reach of the sink, or is it in a cupboard across the room? Is there a little shelf over the sink on which can be kept such things as soap; a narrow strip of hooks above the sink for soap dishes, dish mops and dippers?

Has the work table shallow drawers which hold carving knives, work spoons, knives, forks, etc., and a deeper drawer for extra towels, holders, etc? Are the skillets, saucepans, kettles and long spoons on shelves or hook strips near the stove? Have we really furnished the kitchen with all the convenient work tools we can afford? There are many ways to "make the head save the feet!"

Causes of Difficult Churning

Difficulty in churning is often experienced when only one cow is milked, and that one a stripper. It never occurs when using cream from fresh cows. The cream churns with difficulty because it contains more curd than the fresh cow's milk and because the fat is harder. The trouble has no connection with failure to supply salt or with the character of the feed given the animal, according to creamery experts.

The first thing to do is to make certain the cream is not too thin and that the temperature is right. Having these conditions right does not always remedy the trouble. In bad cases there is no practical remedy, especially when the milk all comes from one cow. A cow that is producing milk giving rise to this trouble had better be dried up as soon as she has been in milk ten months or more. Adding cream from a fresh cow if other conditions are right will generally cause the cream from both to churn.

Foods for Youngsters

WHAT are the best foods for my children? This question is perplexing more than one mother and in order to be able to answer this query dietetic experts have recently given the subject much attention.

For children from four to eight years of age, it is suggested that four meals are desirable. This sample menu is offered: For breakfast, stewed fruit, cereal with whole milk or thin cream, or bread and milk, and, when possible, an egg may be served. For a mid-morning meal milk with a thin slice of bread and butter is adequate.

The dinner may consist of a lightly cooked egg, spinach or peas or string beans, mashed baked potato or boiled rice, and stewed fruit or a light pudding.

A well-cooked cereal with thin cream, milk to drink and stewed fruit, make an acceptable supper. A lightly cooked egg, bread and butter, milk to drink, and a baked apple are likewise desirable for the evening meal.

Scorched Cloth

If you have the misfortune to scorch a garment while ironing, try the following remedies:

Scorch upon cotton and linen sometimes can be removed if the fibers are not actually burned. Wool and silk, however, are disintegrated at a lower temperature than cotton and linen and can not be restored to their original condition after being scorched.

For removing slight scorch stains from cotton and linen, use one of the following agents:

Laundry soap and water. This is sufficient to remove very slight stains.

Water and sunlight. Wet the spot with water (or soap and water) and expose to the sun for a day, or longer, if necessary. The scorch disappears much more slowly if the material is not moistened before exposure.

Bread crust. Very slight scorches on the surface of materials which are not especially delicate sometimes can be rubbed away with a bread crust.

School Lunches

To provide variety in the school lunches, and at the same time to include ingredients which will "balance" the nutritive values, is an ever-present problem in the average household. The following suggestions may be of practical assistance. These five lunches are not only healthful, but somewhat different from those usually given the children.

1. Sandwiches with sliced tender meat for filling; baked apple, oatmeal cookies.
2. Slices of meat loaf or bean loaf; bread and butter sandwiches; stewed fruit; gingerbread.
3. Bottle of milk; thin corn bread and butter; dates; apple.
4. Cottage cheese; rye bread; celery, and honey drop cakes.
5. Egg and lettuce sandwiches made of oatmeal or whole wheat bread; cornmeal cakes, and fruit.

A half cup of vinegar and a teaspoon of alum added to a pail of water is all you need to make fast the color in that blue cotton or linen of which you are suspicious.

When you think of peanut butter, think of it not only as a substitute for butter, but for meat. It is rich in protein as well as fat.

"For a Change"

WITH eggs returning to normal prices again, they afford a welcome and healthful change in the diet. In any of the following recipes they may be used in place of meat in the meal. Eggs are much more easily digested if time is taken to cook them very slowly.

Steamed Eggs

Butter slightly the bottom of a custard cup and slip an egg into it. Place the cup in a pan of gently boiling water (water should come half way up side of cup); cover and steam until white of egg is done. Steamed eggs may be served on crisp toast if desired.

Poached Eggs and Tomato Sauce

Allowing ½ teaspoon of salt to 1 quart of water, have a shallow pan two-thirds full of boiling water. Break each egg separately into a saucer and slip into the water. Cook as for poached eggs and serve with the following sauce:

2 cups canned tomatoes and
1 slice onion, or
1 cup tomato sauce.
¼ teaspoon salt.
2 tablespoons butter.
2 tablespoons flour
⅛ tablespoon pepper.

Cook tomato and onion, finely chopped, 20 minutes, then rub through a strainer. Melt the butter, add dry ingredients and strained tomatoes. Pour this sauce over the eggs and serve.

Eggs in Nest

Carefully separate the white from the yolk of an egg. Beat the white until stiff and pile lightly on a nicely trimmed slice of toast. With a spoon, make a depression in the top of the white and slip the egg yolk into it. Place on a baking dish in a moderate oven and when the white has become a golden brown remove and serve. It may be seasoned to taste.

Eggs Goldenrod

1 cup milk.
2 tablespoons butter.
¼ teaspoon white pepper.
1½ tablespoons flour.
4 hard cooked eggs.
1 teaspoon chopped parsley.
½ teaspoon salt.
6 slices toast.

Melt the butter, add the dry ingredients and stir until smooth. Add the heated milk slowly, stirring constantly, and allow to come to the boiling point. Separate the yolks from the whites of the hard cooked eggs. Chop the whites finely and add them to the white sauce. Cut the slices of toast in half and after arranging on the platter, pour the sauce over them. Put the yolks through a potato ricer or press them through a strainer, sprinkling them over the sauce. Garnish with parsley and serve.

Dutch Eggs

6 hard cooked eggs.
½ cup grated cheese or cottage cheese.
1 cup white sauce.
1 sweet red pepper cut into strips.

Cut the eggs into quarters and place about one-quarter of the amount in a buttered baking dish. Cover this layer with sauce and sprinkle over it a layer of cheese; then a few pieces of the pepper. Repeat until the dish is full. Sprinkle bread crumbs on top, dot with butter, and brown in a hot oven.

Escalloped Eggs

2 tablespoons butter.
2 cups bread crumbs.
6 hard cooked eggs.
2 cups cooked macaroni or rice.
1 cup milk.
½ tablespoon salt.
2 tablespoons flour.
3 tablespoons grated cheese.
¼ teaspoon pepper.
1 cup tomato sauce.

Make a sauce of the flour, butter, salt and pepper, and remove from the fire to add grated cheese. Stir until melted. Combine carefully the cooked macaroni or rice, sliced egg and salt. After covering bottom of baking dish with buttered crumbs, add the mixture. Then add rest of crumbs, brown in hot oven and serve with tomato sauce.

International Tillage Brings Bigger Yields and Better Grades

MANY are the uses, and great is the value of a good disk harrow. More than any other farm tool, its proper use takes the gamble out of crop raising. The perfect seed bed that causes quick, strong germination of the seed, rapid growth of the plant, and even maturing of the crop, cannot be made without a disk harrow. A good one costs so little, and plays such an important part in determining the yield and value of your crops, that its purchase deserves really serious consideration.

Knowing the character and condition of your soil as you do, you will know whether to buy a two or three-lever harrow, a tandem, or one of our new leverless tractor disks, but, whichever style is best for your work, you will find a high-grade, up-to-date harrow of that style in the International line, and of a size, suitable to your power equipment. We have sold disk harrows for years, but never was the line so complete, or of such high quality, as the line we offer for 1919. The local dealer will explain the value of the many features we have not space to mention here.

Other useful implements in this line, each built for its own special work, are open end, closed end, and flexible peg-tooth harrows, spring-tooth harrows with single and double end teeth, and one-horse cultivators with every kind of tooth and shovel equipment. These, too, can be seen at the local dealer's place of business, or we will send catalogues on request.

Glance over the list of machines in this advertisement and write us for full particulars about any in which you may be interested.

The Full Line of International Harvester Quality Machines

Grain Harvesting Machines
Binders, Push Binders
Headers, Rice Binders
Harvester-Threshers, Reapers
Shockers, Threshers

Tillage Implements
Disk Harrows
Tractor Harrows
Spring-Tooth Harrows
Peg-Tooth Harrows
Orchard Harrows, Cultivators

Planting and Seeding Machines
Corn Planters, Corn Drills
Grain Drills, Broadcast Seeders
Alfalfa and Grass Seed Drills
Fertilizer and Lime Sowers

Haying Machines
Mowers, Side Delivery Rakes
Comb. Side Rakes & Tedders
Tedders, Loaders (All types)
Baling Presses, Rakes
Sweep Rakes, Stackers
Comb. Sweep Rakes & Stackers
Bunchers

Belt Machines
Ensilage Cutters, Corn Shellers
Huskers and Shredders
Hay Presses, Stone Burr Mills
Threshers, Feed Grinders
Cream Separators

Power Machines
Kerosene Engines
Gasoline Engines
Kerosene Tractors
Motor Trucks
Motor Cultivators

Corn Machines
Planters, Motor Cultivators
Drills, Ensilage Cutters
Cultivators, Binders, Pickers
Shellers, Husker-Shredders

Dairy Equipment
Cream Separators (Hand)
Cream Separators (Belted)
Kerosene Engines
Motor Trucks, Gasoline Engines

Other Farm Equipment
Manure Spreaders
Straw Spreading Attachment
Farm Wagons, Stalk Cutters
Farm Trucks, Knife Grinders
Tractor Hitches, Binder Twine

International Harvester Company of America
(Incorporated)
Billings, Mont. Crawford, Neb. Denver, Colo. Helena, Mont.
Los Angeles, Cal. Portland, Ore. Salt Lake City, Utah
San Francisco, Cal. Spokane, Wash.

BEES PAY

Bee-keepers can obtain from the Apiary Department of the Diamond Match Co. the finest quality of Bee-Keepers' Supplies at fair prices.

The Apiary Department, which is in charge of experienced Bee-Keepers, is one of the largest of its kind in the United States and maintains a constant excellence of product and unsurpassed service.

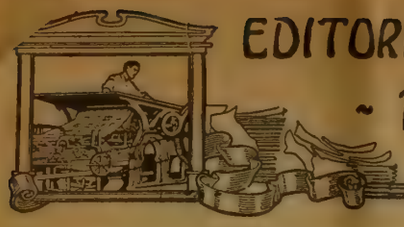
Write for catalogue and if a beginner for Cottage Bee-Keeping, which will be promptly mailed free.

THE DIAMOND MATCH CO.
APIARY DEPARTMENT
CHICO, CALIFORNIA, U. S. A.

ALFALFA SEED
Common Variety, 26c per lb.
Smooth Peruvian, 33c per lb.
Hairy Peruvian, 43c per lb.
C-E-R-T-I-F-I-E-D S-E-E-D
Delivery to You by Prepaid Freight.
Delay Buying Until You Have Compared My Samples With Seed Others Offer.
E. F. SANGUINETTI
YUMA, ARIZONA—THE HOME OF HAIRY PERUVIAN.

FISH
Salmon in brine, 100 lbs., $14.00. Shipping weight, 175 pounds.
Smoked Salmon, 20 lbs., $4.00. Dried Codfish, 10 lbs., $1.75. T. A. Beard, 4322 Winslow Place, Seattle, Wash.

Ask Your Dealer for
ELDORADO COCOANUT OIL CAKE
for Horses, Milch Cows, Chickens, Young Pigs and Hogs. Cheapest feed on the market today. If your dealer doesn't carry it, address
EL DORADO OIL WORKS
433 California St., San Francisco.



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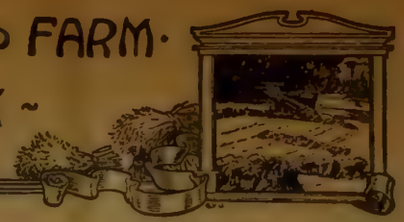

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Bills to Pay

IT WILL be easy to forget. We are not living where we can walk out across the pitted fields of carnage and count the crosses which mark the graves of thousands of brave American fighting men.

As we plunge once more into the whirl of life, answering the exacting demands of our peaceful occupations, it will not be difficult almost to eradicate from our minds the vivid impressions which were naturally uppermost during the period of the war. True, we can never forget entirely, but Time is the great healer; even by the end of April, when you are again to be asked to back your Government by the purchase of bonds, many of us will have come to regard the terrible four-year slaughter as a sort of nightmare, as a sickening dream from which we have at last awakened.

But there are yet bills to be paid—bills amounting to billions. America made the kind of preparations each of us would have wanted her to make. In 1919, had the yellow Hun dogs not skulked into the protective shadow of the white flag, their sullen, arrogant ranks would have been torn and shattered by a fury beyond the scope of imagination; the sky over Northern France; yes, over the Hunland, itself, would have been black with the wings of American airplanes driven by Liberty motors; American tanks and artillery would have made German trenches uninhabitable; the Teuton towns and villages, the mines, the factories—probably even the great capital city which is every German's pride, would have been bombed and bombarded; smothered under tremendous volumes of gas; wrested from the ruthless hands that wrought unspeakable destruction and desecration upon more beautiful and sacred lands than theirs. A million more indomitable doughboys would have confronted their boastful armies.

They saw this coming and they quit. Yet that does not lessen the cost of these gigantic preparations which your America made. One more big loan, which is to be known as the "Victory Loan," together with the various measures of taxation in effect and contemplated, should serve to pay these bills. They must and will be promptly and honorably met.

The Victory Loan will not have behind it the fervor and enthusiasm which marked the first four great war loans, but its failure would be no less a disgrace to America, for that would indicate that our people were unwilling to pay the price of victory. It will be a more sober event, this new bond issue—an "honor loan," it might be called. And no right-thinking American citizen will fail to do his share towards completing Uncle Sam's greatest deal. The balance must be put on the right side of the ledger. Once more, do your share!

Home Flower Garden

(Continued from Page 27)

with a lawn roller. This rolling helps to press the ends of the runners down into the soil, assisting the plants to take hold and to make more roots.

Mealy Bug on Daisies

"When I took up my Shastas to divide and replant, I found the roots covered with white bugs. They looked at first like tiny bits of cotton, but when I examined them I saw they were small bugs, shaped like a 'sow bug,' but not nearly as large. There seemed to be a kind of web on the roots. Can you tell me what it is and what to do? Will these pests kill my plants?"

Your Shastas are infested with mealy bugs. You can take the plants up and wash the roots with a resin wash. If you cannot get the resin wash, try strong soap suds, with plenty of washing powder added. I do not think the mealy bugs will kill your Shastas, but undoubtedly the flowers are better off without the bugs.

Treatment for White Grubs

"I noticed a spot in my row of sweet peas that was almost eaten off. First thought it was due to birds, but when I covered the row with netting and found that it did no good, I began to look for cutworms. When I dug down into the soil I found a lot of little, fat, white grubs. I have some perennials back of my sweet-pea row. Will the bugs kill them, and what can I use for a remedy?"

I am wondering if in that row of perennials there is not some golden glow? If so, the little grub is probably the larva of the snout-nosed rose beetle. It is especially fond of golden glow and the soil is often full of the grubs for some distance around these plants.

Get Black Leaf "40" or some other nicotine solution, dilute according to directions and pour around the roots of your plants. This is a poison and has been found to be very effective. It is a good plan to look around the roots of all the plants near the infected spot and to turn the soil out and put fresh soil near the roots. These grubs will not only eat small plants, but will crawl up larger plants and eat the leaves. The snout-nosed rose beetle is the "hog" of the pest world. It is a dirty gray, hard-shelled bug, not so very large and with a peculiar snout that gives it its name. It will eat anything in the garden—roses, shrubs and fruit-tree foliage—and seems to like the blossoms as well as the leaves.

When you find a choice plant with leaves all chewed up, look for this dirty gray pest. One of the best ways to clear them out is to carry a small can or pail containing kerosene and knock the bugs with a stick into the oil. They are easily seen and you can clean a plant in this manner in a few minutes. Then burn the coal oil and bugs together.

A Friendly Warning

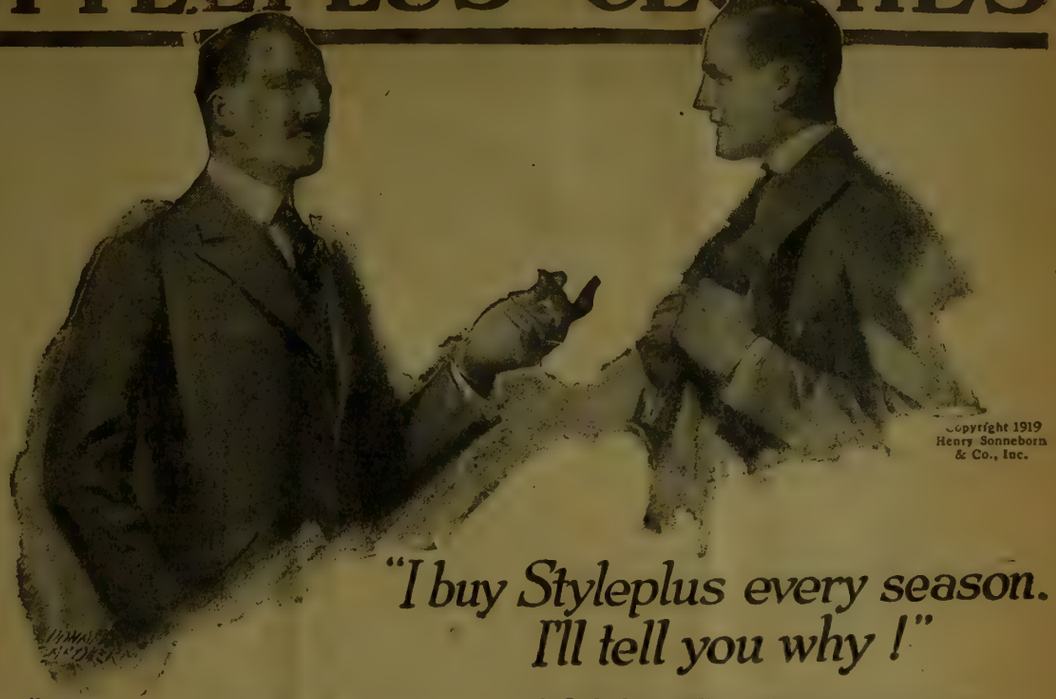
Be careful, Mister Tourist—
Be careful what you buy;
You can't grow corn and onions
Where cactus plants would die.

California needs you;
True happiness is there.
But if California feeds you—
Select your land with care.

Not lime nor acid phosphate,
Nor humus content high,
Will bring you in an income
From hard-pan alkali.

Invest your hard-earned savings
In soil that's true and tried.
We have a few land dealers
Who are not a source of pride.

STYLEPLUS CLOTHES



"I buy Styleplus every season. I'll tell you why!"

"I buy all my clothes at one store—the Styleplus Store in town. The advantage is that each suit has the Styleplus label in the collar, the price label is put right on the sleeve by the makers, and they guarantee the clothes.

"See the point? I *know* the manufacturer is back of these clothes and they *must* be good. I *know* that the price is right. Styleplus style and Styleplus quality suit me down to the ground. The prices are always reasonable.

"I never buy a suit of clothes without seeing it first and trying it on. Then it fits right and I get just what I want.

"Be a Styleplus 'regular' and your clothes troubles are over. And you'll always get your money's worth!"

Styleplus Clothes
$25-$30-$35-$40
TRADE MARK REGISTERED

The sleeve ticket tells the price

Sold by one leading clothing merchant in most cities and towns. Write us (Dept. AK) for Styleplus booklet and name of local dealer.

HENRY SONNEBORN & CO., INC.
Founded 1849 Baltimore, Md.

America's only known-priced clothes

Top Dress with Nitrate of Soda

It does not Sour the Soil

Nitrate of Soda leaves no mineral acid residue behind to injure your soil. It makes bigger crops—and keeps the land sweet.

Nitrate of Soda

Top dress 100 lbs. per acre for seeded crops; 200 lbs. cultivated in thoroughly for cultivated crops. These light dressings, evenly spread over an acre, will work for your profit.

WM. S. MYERS
Chilean Nitrate Committee
25 Madison Ave. New York

BUSH CAR—FREE

This Five Passenger 37 H. P. car, 116 in. whl. base. All bearings Timken. Gelco Ign.—Dyneto Stg. and Ltg. Write at once for my great Free Offer and 48-page catalog. Agents wanted to drive and demonstrate. Territory open. Prompt shipments. Big money. Cars guaranteed or money back. 1919 cars now!

BUSH Motor Co., Bush Temple, Chicago, Ill. Address J. H. Bush, Pres., Dept. D167.

You can learn a lot from ADVERTISING

The main thing an advertiser wants to do is to tell you plainly just how and why his goods are worthy of your consideration. You can learn a great deal from that alone, because many things you see advertised are the things you buy and use in your regular daily life. By reading the advertisements, you can learn the names and read descriptions of the things that are best and most satisfactory.

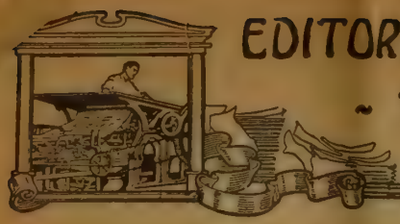
But advertising teaches even more than that. All advertisers try to make their advertisements themselves valuable to you.

A good many people have learned a whole lot about good music, good books, good food, good clothes, ways to keep healthy, ways to live comfortably, ways to keep the house and grounds looking well—they've learned all these things and many other things just by reading advertisements.

Read the advertisements right along, and you will learn a great deal that will be helpful and valuable to you as you go through life.

ORCHARD AND FARM

"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.



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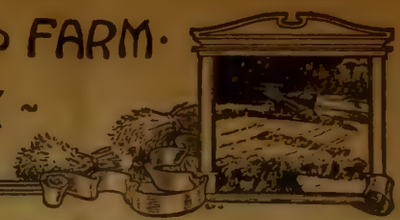

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Bills to Pay

IT WILL be easy to forget. We are not living where we can walk out across the pitted fields of carnage and count the crosses which mark the graves of thousands of brave American fighting men.

As we plunge once more into the whirl of life, answering the exacting demands of our peaceful occupations, it will not be difficult almost to eradicate from our minds the vivid impressions which were naturally uppermost during the period of the war. True, we can never forget entirely, but Time is the great healer; even by the end of April, when you are again to be asked to back your Government by the purchase of bonds, many of us will have come to regard the terrible four-year slaughter as a sort of nightmare, as a sickening dream from which we have at last awakened.

But there are yet bills to be paid—bills amounting to billions. America made the kind of preparations each of us would have wanted her to make. In 1919, had the yellow Hun dogs not skulked into the protective shadow of the white flag, their sullen, arrogant ranks would have been torn and shattered by a fury beyond the scope of imagination; the sky over Northern France; yes, over the Hunland, itself, would have been black with the wings of American airplanes driven by Liberty motors; American tanks and artillery would have made German trenches uninhabitable; the Teuton towns and villages, the mines, the factories—probably even the great capital city which is every German's pride, would have been bombed and bombarded; smothered under tremendous volumes of gas; wrested from the ruthless hands that wrought unspeakable destruction and desecration upon more beautiful and sacred lands than theirs. A million more indomitable doughboys would have confronted their boastful armies.

They saw this coming and they quit. Yet that does not lessen the cost of these gigantic preparations which your America made. One more big loan, which is to be known as the "Victory Loan," together with the various measures of taxation in effect and contemplated, should serve to pay these bills. They must and will be promptly and honorably met.

The Victory Loan will not have behind it the fervor and enthusiasm which marked the first four great war loans, but its failure would be no less a disgrace to America, for that would indicate that our people were unwilling to pay the price of victory. It will be a more sober event, this new bond issue—an "honor loan," it might be called. And no right-thinking American citizen will fail to do his share towards completing Uncle Sam's greatest deal. The balance must be put on the right side of the ledger. Once more, do your share!

Home Flower Garden

(Continued from Page 27)

with a lawn roller. This rolling helps to press the ends of the runners down into the soil, assisting the plants to take hold and to make more roots.

Mealy Bug on Daisies

"When I took up my Shastas to divide and replant, I found the roots covered with white bugs. They looked at first like tiny bits of cotton, but when I examined them I saw they were small bugs, shaped like a 'sow bug,' but not nearly as large. There seemed to be a kind of web on the roots. Can you tell me what it is and what to do? Will these pests kill my plants?"

Your Shastas are infested with mealy bugs. You can take the plants up and wash the roots with a resin wash. If you cannot get the resin wash, try strong soap suds, with plenty of washing powder added. I do not think the mealy bugs will kill your Shastas, but undoubtedly the flowers are better off without the bugs.

Treatment for White Grubs

"I noticed a spot in my row of sweet peas that was almost eaten off. First thought it was due to birds, but when I covered the row with netting and found that it did no good, I began to look for cutworms. When I dug down into the soil I found a lot of little, fat, white grubs. I have some perennials back of my sweet-pea row. Will the bugs kill them, and what can I use for a remedy?"

I am wondering if in that row of perennials there is not some golden glow? If so, the little grub is probably the larva of the snout-nosed rose beetle. It is especially fond of golden glow and the soil is often full of the grubs for some distance around these plants.

Get Black Leaf "40" or some other nicotine solution, dilute according to directions and pour around the roots of your plants. This is a poison and has been found to be very effective. It is a good plan to look around the roots of all the plants near the infected spot and to turn the soil out and put fresh soil near the roots. These grubs will not only eat small plants, but will crawl up larger plants and eat the leaves. The snout-nosed rose beetle is the "hog" of the pest world. It is a dirty gray, hard-shelled bug, not so very large and with a peculiar snout that gives it its name. It will eat anything in the garden—roses, shrubs and fruit-tree foliage—and seems to like the blossoms as well as the leaves.

When you find a choice plant with leaves all chewed up, look for this dirty gray pest. One of the best ways to clear them out is to carry a small can or pail containing kerosene and knock the bugs with a stick into the oil. They are easily seen and you can clean a plant in this manner in a few minutes. Then burn the coal oil and bugs together.

A Friendly Warning

Be careful, Mister Tourist—
Be careful what you buy;
You can't grow corn and onions
Where cactus plants would die.

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True happiness is there.
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Nor humus content high,
Will bring you in an income
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In soil that's true and tried.
We have a few land dealers
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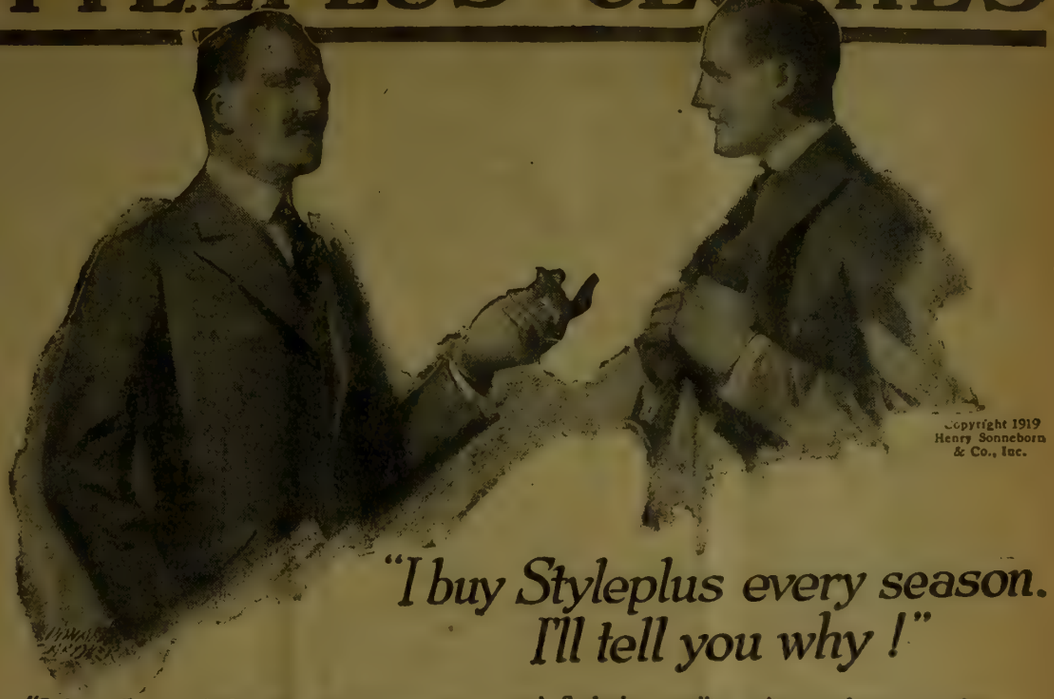

"I buy Styleplus every season. I'll tell you why!"

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The main thing an advertiser wants to do is to tell you plainly just how and why his goods are worthy of your consideration. You can learn a great deal from that alone, because many things you see advertised are the things you buy and use in your regular daily life. By reading the advertisements, you can learn the names and read descriptions of the things that are best and most satisfactory.

But advertising teaches even more than that. All advertisers try to make their advertisements themselves valuable to you.

A good many people have learned a whole lot about good music, good books, good food, good clothes, ways to keep healthy, ways to live comfortably, ways to keep the house and grounds looking well—they've learned all these things and many other things just by reading advertisements.

Read the advertisements right along, and you will learn a great deal that will be helpful and valuable to you as you go through life.

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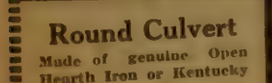

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SANTA MARIA—BRYANT TROTT & CO.

How to Control Garden Pests

You have probably wished for a long time that you could find some simple, "boiled-down" directions for controlling the common garden pests. This article is designed to assist the average gardener who has no time to classify bugs and memorize complicated formulas.

OF THE long list of chemicals and combinations of chemicals used for combating pests, just three are of major importance. (Is not that encouraging for a "starter"?) Small quantities of each should be purchased by every home gardener, together with an inexpensive hand-sprayer for applying them. The "big three" are:

Bordeaux Mixture, used principally for plant diseases, such as blights.

Nicotine Sulphate, or black-leaf "40," used for sucking insects such as plant-lice.

Arsenate of Lead, used as a spray (or for making poison bait) for chewing insects, such as beetles and cut worms.

The average gardener has neither the time nor the inclination to identify each insect which menaces his garden. He is, moreover, apt to be confused by the publication of complete and complicated formulas for each difficulty which may arise. These directions, therefore, are designed to afford the best general protection for all plants in the garden. They are taken from the methods of a successful home gardener. Here is his system:

To begin with, he makes sure that his garden plot is clean from season to season, and that there are no bushes or weeds near it which might harbor injurious pests. All refuse is destroyed and in case any plants are attacked by disease, they are entirely removed and destroyed before the soil is again used. He selects his tubers very carefully for planting and disinfects potato seed by soaking the uncut potatoes for two hours in a solution of 1 ounce of formalin to 2 gallons of water. He buys only reliable seeds for all his vegetables. He applies the "ounce of prevention" principle whenever possible. He uses sufficient manure and commercial fertilizer to insure a quick start for all plants, and spades deeply in the fall in order thoroughly to renovate the ground.

Mechanical Methods

Not alone does he depend upon chemicals, but he also wages incessant warfare against the larger eating worms and bugs by knocking them off of the plants every day or so into a bucket of kerosene, where they are destroyed by burning. Every week or 10 days he sprinkles lime around where slugs or snails are seen, and he also limes his soil regularly when fertilizing, believing that in addition to improving its physical quality, this practice helps the fight against the insect enemies.

Having a small garden, he makes no effort to spray each kind of plant separately for each kind of pest. Asked recently to explain his plan in the simplest manner, he said:

"I once tried a combination spray of all three kinds of chemicals every 10 days, but abandoned this in favor of two separate sprays, one a combination of Bordeaux and nicotine and the other plain arsenate of lead. The first or combination spray serves to prevent disease and control the "suckers," while the other kills the eaters. Make the combination spray as follows:

Bordeaux Mixture .....4 gallons
Laundry Soap (or soap powder) .....1 ounce
Nicotine Sulphate .....1 ounce

"In this strength, this spray cannot injure any ordinary garden plant. The soap makes it stick. Spray in the early morning once a week whether you see any pests or not, being sure to cover the under side of the leaves, where the plant lice gather. Remove any crumpled leaves which the spray cannot reach.

When to Use Arsenate

"I use the arsenate of lead solution only every 10 days, never spraying, however, on the same day as with the combination. This poison solution is made as follows:

"Mix 1 ounce of the powder with 6 quarts of water, or if the paste form of the arsenate is used, mix 2 ounces of the paste with 6 quarts of water. In either case, add 1 ounce of soap to make it stick. This liquid spray is the best form, but if desired, the powder may be sifted on the plants while they are wet with dew; this, however, is more expensive and probably less effective."

It will pay also to buy a little white powdered arsenic to make a poison bait for cut worms and slugs, which is sprinkled on the ground about the plants. The following is a good formula for a bait:

Wheat bran .....1 pound
Powdered white arsenic.½ ounce
Syrup or molasses.....2 ounces
Water to make a thick "mush."

Never use arsenic baits, solutions or powders on vegetables that are about ready for table use, and as a precaution always wash all vegetables before using.

Plant Diseases

For the prevention of which Bordeaux Mixture is used. Above, bean anthracnose; below, left, early blight of potatoes; right, late potato blight.

Paper collars, pushed into the ground around young plants and cheesecloth covered frames set over the plants are also favored methods of protecting young plants from the destructive worms.

Excepting mildew the above treatments will effectively control most ordinary difficulties. "Downy mildew" (a thick, white growth) is usually destroyed by the Bordeaux. But it is often necessary to use flowers of sulphur or pulverized sulphur for the "powdery mildew" which sometimes attacks peas. This is recognized by the powdery, white growth which spreads upon the plant.

The last, but not the least, important step is to set a trap or put out some poison for the gopher or squirrel and to hang out some rags to frighten the birds. The best method of keeping ahead of the pests is frequent and careful inspection of everything in the garden. Know your plants and know what is happening to them! If disease "gets hold" of plants in spite of all you can do, destroy the affected ones and plant something else in that spot in the garden. Don't let the trouble spread! Use the sprays freely and start when the plants are small.

An Apple Show

(Continued From Page 22)

Baldwins were some of the varieties shown in the Red room, which was the most ornate of the three. While all the displays were excellent, they showed that the Humboldt soil and climatic conditions are peculiarly adapted to the cultivation of the Greening, the Spitzenberg, the Newtown, Bellefleur, Jonathan and such Eastern varieties as the Genetin, Baldwin and Northern Spy.

Many varieties, peculiarly Humboldt's own, were also shown. These were mostly products from the Ettersburg Experiment Orchard of Southern Humboldt, where Albert F. Etter has been experimenting with apples for the past twenty-five years. Beginning with 600 varieties, Mr. Etter now has a row of seedlings that, placed in an ordinary orchard row, would extend a distance of eighty miles. He has created many varieties that are peculiarly suited to conditions of the North California coast section and promise much for the future.

Association Organized

The apple growers brought together at the show were impressed with the necessity of forming some sort of co-operative organization for mutual assistance in the planting, cultivation and marketing of their produce. The Humboldt County Apple Growers' Association was the result. Through this medium each of the orchardists will profit materially. Modern power spraying outfits will be provided for the benefit of all members; expert pruners, or advice on the subject of pruning, will be available whenever desired, while the produce will be marketed in wholesale lots at a better profit than has been possible under existing conditions. The marketing problem has had much influence in retarding the development of the industry in Humboldt section. The orchardists have generally followed the bent of their natural preference in planting, with the result that multitudinous varieties in small lots have been produced. Moreover, because of the remoteness of the district from the commercial distributing points, the orchardists have not been able to get a suitable outside market. Under the new arrangement all this will be changed.

Another fact brought out by the Apple Show was that fruit properly packed and graded would bring fancy market prices. Nearly all the box displays at the show were disposed of for $2.50 per box, a price considerably in advance of that asked in the open market. An expert packer and grader from the Hood River district gave demonstrations at the Apple Show in preparing fruit for the market and demonstrations were also given in the orchards during the week the exhibition was being held by an expert packer and grader sent out by the University of California. The result was a determination on the part of the Humboldt growers to place their fruit under a standard label and standard pack in order to place it properly upon the market.

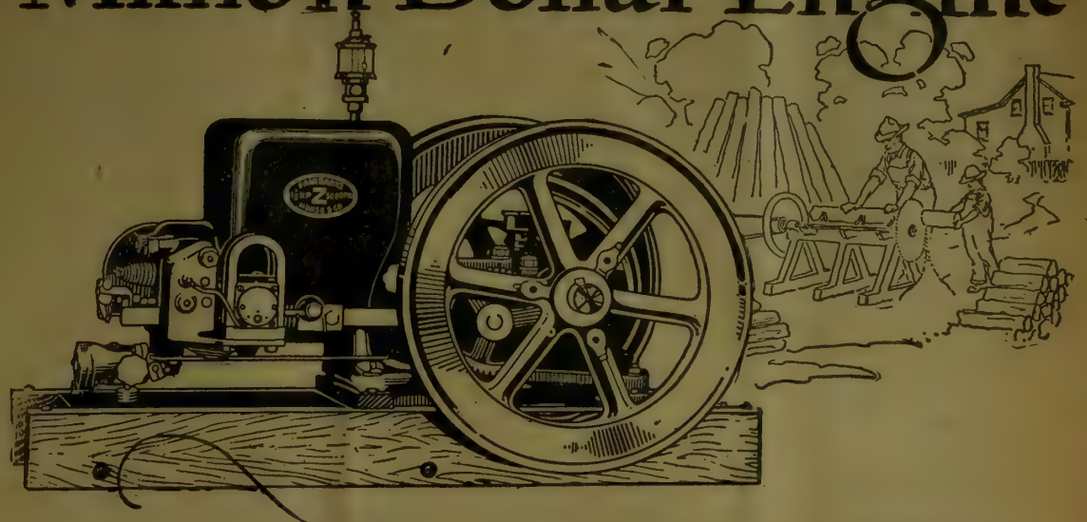
Big Tractor Demonstration

San Joaquin Valley tractor and agricultural implement dealers have arranged for a great tractor demonstration to be held on the Mordecai ranch in Madera County, midway between the cities of Fresno and Madera, from April 24 to 29 inclusive.

The demonstration will be conducted by the Central California Tractor and Implement Dealers' Association, and arrangements have been made to bring to this show practically every known make of tractor.

After the demonstration has been concluded these tractors will feature the California Raisin Day celebration in Fresno on April 30 by hauling the floats in the big parade.

A New Fifteen Million Dollar Engine



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—increases crops every year
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Oregon Pear Blight Campaign

How Rogue River Valley orchardists are making a winning fight against the ravages of blight, and description of the methods now being used under the direction of experts.

By Sam Raddon

AFTER ten years' unsuccessful fight against the ravages of tree blight, orchardists of the Rogue River Valley, Oregon, three years ago enlisted the aid of County Agent C. C. Cate in a new offensive.

"Get at the root of the thing," said Cate, "and you will win."

They took the advice literally, and as a result seem to be really on the road to victory.

The chief feature of the anti-blight campaign carried on under the direction of Mr. Cate is the drastic treatment of the root system of the trees, diseased portions being entirely removed by tree surgery. The entire tree is removed and destroyed, however, if the affected areas are particularly large.

What Investigation Showed

In the course of the work it was found that the click beetle is probably the most active of two or three varieties of insects in spreading the blight. It was further found that these beetles gather in myriads about the roots of the trees, and that in their journeys from their underground nests to the tops and branches they carry and spread whatever infection may be in the roots. Diseased roots, therefore, are removed as the first step in the fight against blight.

Bartlett Pear Tree

After treatment of the root system for control of blight. Note how thoroughly the main roots are exposed for examination.

"We took 200 busy beetles from the roots of one tree during the blossoming period," said Mr. Cate, in discussing his blight control work, "the tree being not over four inches in diameter. The beetles go up the tree early in the morning and feed in the heart of the blossoms, thus distributing the germs of the blight most effectively.

"The use of sprays for the control of blight has been discouraged by the Department of Agriculture and experiment stations for many years," he continued, "but we have found them useful in controlling the agencies that carry the infection to various parts of the tree, or from one tree to another.

"A measure of success attended our use of sulphur in quantities of two to four pounds, deposited about the roots of the trees. For three years this treatment has proved a factor in the control of click beetles in the orchards in which we have worked.

"We also found the common grain or weed thrip to be active in the distribution of infection, and in the campaign of spraying against these small pests we determined that a solution of nicotine sulphate, one part to 800 parts, and distillate oil emulsion, one and one-half per cent, was very effective.

"Arsenate of lead may be combined with these ingredients, if necessary, to control codling moth and other leaf-eating insects. If this spray is applied when the first evidence of blight is observed, new infections may be prevented, leaving to the blight cutters only the visible infections to be removed. Without this preventive campaign against new infections the blight cutters cannot keep up with the work of the destructive blight-distributing pests. Spraying in itself is not claimed, however, to be a cure for blight.

Choice of Disinfectants

"After having made careful tests of disinfectants, I recommend the use of cresol instead of bichloride of mercury. Insects do not bother fresh tree wounds as much where cresol is used. Cresol is a soapy solution and is not injurious to the hands, nor will it corrode the instruments."

Summing up the conclusions arrived at by Mr. Cate, and by Prof. F. C. Reimer, superintendent of the Southern Oregon Experiment Station, the following recommendations for the control of tree blight are made, and the treatment outlined is probably as near a solution of the problems arising from that wealth-destroying malady as has yet been reached:

1—Carefully inspect tree tops and root systems and remove all infected parts (providing the infection is not so widespread as to make removal of the entire tree more logical).

2.—Use from one to three pounds of sulphur around the base of the trees.

3—Use bands of sticky insect paper.

4—Spray with oil emulsion, nicotine and arsenate of lead to eliminate insects that spread the blight.

5—Use disinfectant, cyanide of mercury, 1 to 500.

6—Keep on the job all the time and remove all infections as soon as they are located.

Peach Root-Borer

The use of "crude oil whitewash" against the peach root-borer is being advocated by L. R. Cody, county horticulturist commissioner of Santa Clara.

In his investigations, Cody has found distinct sunburn injury resulting from the use of asphaltum, and to offset this condition he has adopted the "white" oil wash, which it appears has the effect of reflecting sun rays and preventing sun scald.

The formula used by Commissioner Cody is known as the Government Formula No. 1 and is as follows:

Fifty pounds of stone lime (in a barrel), slaked with from ten to fifteen gallons of warm water. While the lime is boiling, slowly pour in six gallons of heavy crude oil. Stir and add water to make a heavy paste. This must be used the same day as it is mixed and not used if kept over. Mr. Cody says the cost of borer work in the orchards—that is, the safeguarding work and elimination—is surprisingly small.

There has been quite a heavy planting of French prunes and Bartlett pears in Lake county; plantings to about the first of February included 17,413 pears and 14,465 French prunes, as well as miscellaneous lots of walnuts, almonds, apricots and peaches.

Importance of Stocks Recognized

THE soils of France and America, as well as the souls of those two countries, have been blended —literally.

The most notable instance of the incorporation of American soil into the soil of France was the taking to France of several barrels of American earth in which to bury the body of Lafayette, but French soil has been incorporated into American soil in literally millions of places. Probably every county in the United States has its admixture of French dirt, and it is scarcely too much to say that some particles of it have found their way to practically every farm throughout the length and breadth of the country.

How did it come? On fruit stocks. The above-ground portion of your fruit trees may be pure American, but the underground portion is very likely to be foreign. With the exception of the apple and peach most of the seedling plants on which grafting or budding is done are imported. Even though considerable progress has been made in producing American-grown seedlings from imported French seed, many nurserymen have thus far preferred to import apple seedlings from France and to pay more for them. Just now, however, rather determined attention is turned toward a solution of the problem of fruit-stock production in this country. All of the peach stocks are now "home" grown from seeds produced in this country.

Possibilities For Study

"We are beginning to appreciate more and more," says one of the country's foremost plant pathologists, "that our future successful fruit culture is intimately associated with the problem of stocks. With the exception of the grape, no far-reaching studies have been made on stocks in this or any other country. We have followed certain empirical practices in the past, but as competition becomes greater and the demand for the highest grades of fruit and plant products increases we must know more of the actual relation of stocks to quality of product, to the length of life of the tree or plant, to adaptability to soil and climate and to resistance to disease and insect attacks."

The United States Department of Agriculture has announced its recognition of the necessity for more study along these lines, and will no doubt take the lead in more comprehensive investigations.

The Walnut Worm

ALMOST simultaneously with the development of the electric mangle method of treating walnut-worm infested sacks came the discovery that this worm is none other than the codlin moth, Laspeyresia (Carpocapsa) pomonella, which also attacks apples and pears.

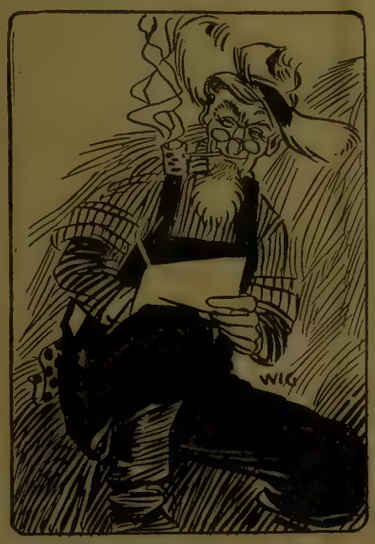
While it is conceded that the positive identification of the worm may shed more light on methods to be employed in its control, it is still contended by the Horticultural Commission that the pest can be largely checked by proper precautions in the handling of the crop, close inspection of cull nuts and disinfection of all used sacks before returning them from the packing-house to the groves.

A Serious Problem

Professor Ralph E. Smith of the University of California, who has been studying the work of this insect during the past season, writes as follows: "I want to go on record as believing that this is the worst pest which has struck the walnuts thus far, and that its spread into new territory can be and ought to be hindered by every possible means along the lines already commenced this season."

Speaking of control measures, Horticultural Commissioner Hecke, in a statement issued early in March, said:

"Assembly Bill No. 645, introduced by Assemblyman H. A. Miller, seeks an appropriaiton of $10,000 for the purpose of determining and applying control measures to combat the spread of the codlin moth. If this bill passes, the State Commissioner of Horticulture will at once call a meeting with the walnut growers and with representatives of the University of California to determine upon a plan of action in order that the greatest possible benefits may be received by the industry concerned. There is acute need for this money in carrying on the fight against this insect during the next two years. Now that the identity of the insect has been definitely established, it should not be considered that the fight has been won, but this information should be used merely for the most intelligent prosecution of the best known methods of control."



The Practical Poet

I love the smell of new-mown hay;
It soothes my troubled senses.
(And when it's thirty dollars—say,
It helps to pay expenses.)

I love the fragrant lucerne field
I like to be the raker,
(Especially when I get a yield
Of ten tons to the acre.)

I love to lie in well-filled mows
And smell the perfumed clover.
(With feed assured for all my cows—
And maybe some left over.)

The grand total value of the important products of Orange county for the year 1918 is $63,410,500. Orange county leads in the production of Valencia oranges, Eureka lemons, walnuts, beet sugar and peppers. It has the largest tomato seed farm in the United States. It is the smallest county in area in the State south of the Tehachapi (784 square miles).

The making of marmalade is becoming quite an industry. The San Dimas plant is turning out 18,000 pounds of marmalade each day and the Anaheim plant is expected at least to equal this figure. A substantial marmalade factory is being built at Sierra Madre.

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BEET CULTIVATOR

You can cultivate 2, 3 or 4 rows of beets or beans with this cultivator and do a better job, easier, and at less expense than you ever did before.

The operator controls the cultivator with his feet by pushing forward upon the foot levers which pivot the wheels and guide the tool bars in the same direction, thus providing the most efficient method for controlling a cultivator which is used to cultivate more than one or two rows at a time.

The tool bar is of sufficient length so that by the proper selection and adjustment of tools, rows may be cultivated anywhere from 16 to 48 inches apart. The tool bars are attached to the frame in a pivotal position. These connecting pivotal bars are in the line of draft and distribute the pull directly to the tool bars, thus getting the draft point as low as possible and making it as direct as possible.

For cultivating beans an extra long tool bar can be provided which is sufficiently long to enable the operator to cultivate four 30-inch rows, or any spacing between 30-inch and 24-inch; which is the capacity of the regular tool bar. This makes the cultivator especially valuable for cultivating beans and it may be equipped with the following sizes of goose feet: 5, 8, 10, 12, 15 and 18 inches.

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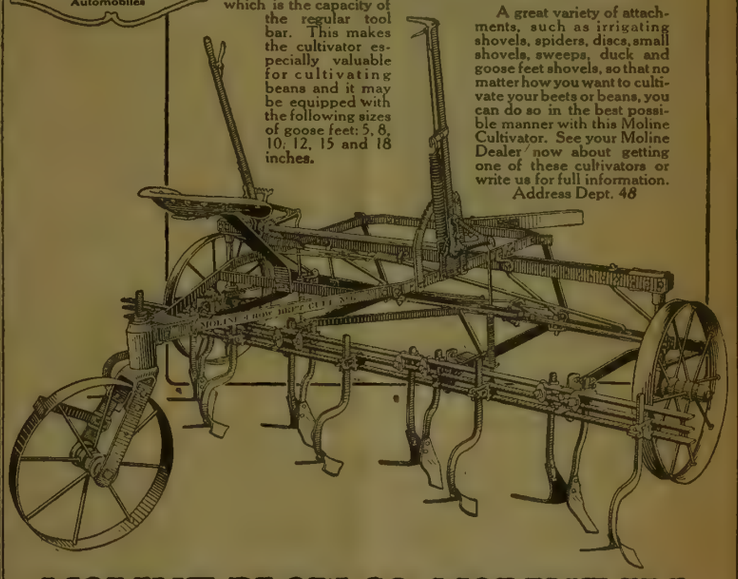

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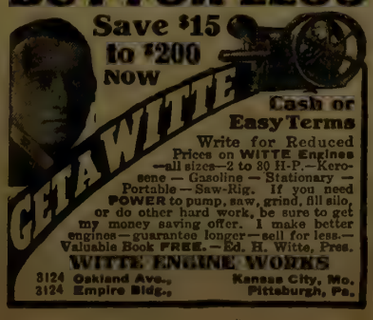

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Mrs. A. F. Cook of Dunnigan, California, writes.

"We have had a Pittman Concrete Iceless Refrigerator since last spring and have found it very satisfactory, indeed. It keeps the bottles of milk cool even in the hottest spells of the summer. All food is kept cool as the refrigerator affords a good circulation of air. This keeps the interior sweet and odorless. It is very simple to clean which is another good feature."

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The rings with a record of eight years successful performance behind them. Power producers because they create uniform pressure all around the cylinder wall, leaving no place for the power to slip past.

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A special ring for engines that pump oil.

Used in top groove only of pistons to control excess oil, with McQuay-Norris LEAK-PROOF Piston Rings in lower grooves to insure maximum compression and fuel economy.

Land-Hungry Poor Man

(Continued From Page 16)

problem of land division. The importance of this problem in California can be visualized when it is considered that in this State 310 men own 4,000,000 acres of practically unsettled land which is suited to intensive cultivation.

Individual Problems Studied

The purchase by settlers of what might be termed uneconomical holdings has been prevented in other countries by wisely planned development. One illustration may emphasize the importance of this point. A young carpenter, moved by his love for the country, went to Australia some years ago to take advantage of the opportunities offered to those who wished to settle on irrigated land developed by the State. He applied to the project commissioner for 40 acres of land and for money with which to help him pay for equipment and ten cows. As he had had no experience in agriculture he was told to get a position as a ranch hand and report again after six months' trial at his newly chosen profession.

He carried out this advice and returned with a good recommendation from his employer and with a stronger desire than ever to acquire a farm. His request for 40 acres and 10 cows, however, was not granted. The commissioner pointed out that no man could make a living in that particular section with 40 acres and 10 cows and at the same time pay his interest and his indebtedness. The young man, however, was offered 60 acres and 30 cows, which he accepted. He is now a successful and contented resident, forming an asset to the State not to be measured in money value.

Not only must the size of the farm conform to the type of agriculture to be followed, but the settler must be in a position to take advantage of the conditions in soil or location which would render his investment most profitable. Poorly laid out farms not only increase the cost of maintenance and operation but often tend to kill that love for the open country which is an incentive for better living. Experience has shown that the average settler will not seek expert advice on this important problem of farm planning unless the advice is furnished free. In order to make the best use of the lands at Durham, therefore, the Land Settlement Board furnishes detailed maps of each allotment. These maps show the contours of the land, the best arrangements for fields and ditches, and the location of the farm buildings. The services of an engineer are available for making detailed surveys for the preparation of land for irrigation. The Board also furnishes plans for houses, barns, garages, hog pens, cattle sheds and other buildings. The cost of this service is added to the original price of the allotments.

Social Life Considered

A 22-acre grove of California white oaks has been set aside as a public park. This forms the center of community activities. Here is where the school house is located, and the agricultural fairs and picnics held. It is the public play ground for the colony and is expected to go far in serving to unite the interests of the neighborhood.

Farming is, of course, the vocation of the settler. His success or failure depends to a large degree upon his adaptability to his profession. As all men are not farmers, the problem of selecting settlers is an important one. The applicants for allotments at Durham must not only fill out detailed application blanks, but must appear before the commission in person to prove their ability to carry the undertaking through. In order further to safeguard the general interest, a provision is made in the contract of sale which prevents the settler from selling within a period of five years. This, of course, also tends to prevent speculation.

A Beautiful Oak Grove

Has been set aside at the Durham Colony to be used as a park and social center. Here are located the school and a hall for meetings and amusements.

The colonists have formed a farm center organization which is affiliated with the county farm bureau. It holds regular monthly meetings, at which the county agent for Butte county, representing the Extension Division of the University of California and the U. S. Department of Agriculture, leads the discussion on current agricultural problems. The county agent also makes personal visits to farmers when asked to do so. The manager of the colony, Mr. Geo. C. Kreutzer, was formerly a county agent and is in a position, therefore, to advise on matters of seed selection, soil management, stock feeding and breeding, and the broader problems of farm management.

Co-operative Buying and Selling

The marketing needs of the colony are provided for by the formation of co-operative marketing associations. These associations not only sell farm products, but buy as well. One breed of pigs, one breed of cows and two breeds of sheep have been selected by the colonists in order that the best breeding stock can be utilized and a reputation established for the quality

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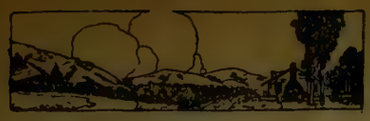

of the output. Community auction sales are arranged where competition in the purchase of livestock is secured and where farm chattels can be exchanged. The pride of the individual in his stock is stimulated by these public auctions, where comparisons are readily made.

The problem of the farm laborer is not overlooked. Farm laborers' allotments valued at from $200 to $400 have been arranged for. A laborer can apply for an allotment without the payment down of any cash and his improvements are furnished on the same terms as the improvements furnished to other settlers. These allotments grant an independence to the laborer that is cherished by every lover of liberty.

Take for example the experience of one of the farm laborers who has applied for an allotment at Durham. He is fifty years old and up to last spring had saved no capital. He applied for a tract of land in June, but has not started building because of the fact that he did not have sufficient money when his application was made to furnish the 40 per cent of the cost of improvements. He was working at $2.50 a day, and his wife was securing $4.00 a day picking fruit. With the incentive of the possibility of owning a home of their own, which was a dream they had never been able to realize before, they put their money in the bank and by November 1st had between $500 and $600 laid by as their savings during the past six months. The simple fact that the State had provided an opportunity for this man and his wife to own a home was the incentive which made them save the money that was necessary for the first payment. Without this possibility their money would have been spent as it had been spent in the past years of his employment as a farm laborer.

In another case an application was made for a laborer's allotment by a man who came with the highest recommendations from his employer for whom he had worked several years. This man was forty years old, but had no capital. His employer testified to the fact that he was a hard and conscientious worker, but no opportunity had been provided for his purchase of a home and as a result he found himself at forty years of age without a realization of the dreams of earlier days. The chance, however, to secure an allotment which could be paid for from his earnings and could be called his own, gives this man the opportunity for which he has been longing.

The problem of the returning soldier who wishes to take up land is then essentially the problem of the settler. Placing men on farms in the United States involves more than a mere cataloguing of areas where, by one means or another, land can be made available. The early colonists who have come "to the end of the rainbow" to hunt the pots of gold so vividly painted by the early promoters of western subdivisions have, through their successes and their failures, focused attention on certain weaknesses in our colonization policy. It is fitting, therefore, that a western State should demonstrate the remedies for these weaknesses and point the way toward a newer and better policy of wisely-planned land settlement.

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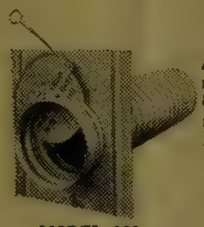

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Gates are supplied in connection with rust-resisting Armco Iron corrugated pipe in any length required.

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OUR PRIZE CONTEST CLOSES WITH THIS ISSUE

Contributions will be accepted until April 15th. Winners will be announced as soon as the judges complete their work. Who will be the lucky subscribers?

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TRACTOR DEMONSTRATION

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Daily public and private demonstrations of every type of Tractor and Power-Farming Machinery manufactured.

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ADMISSION FREE

Reduced Rates—Round trip tickets at one and one-half fare will be on sale from all points on Oakland & Antioch Railway, May 5 to 11 with return limit May 12.

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Learn the facts about America's greatest farming opportunity

Our big, free, fully illustrated booklet tells all about this wonderfully fertile valley near Tucson, Arizona, where farmers are becoming rich. It contains signed statements by the actual settlers. You can write and verify everything they have said. Only 20% of the foodstuffs consumed in Tucson and adjoining mining districts is produced in the valley—the other 80% is shipped in from California and other outside points. Local farmers command fancy prices for everything they can raise. Soil is deep, rich, silty loam; water supply abundant; climate ideal; no drawbacks, nothing but advantages. Land with water, $150 an acre; attractive terms. Farmers, investigate!

Write today for this Free Booklet

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TUCSON, ARIZONA

Canada and Her Idle Acres

The present population of our neighbor on the north is about 8,000,000. The new land policy of the Dominion, which is expected to increase this figure six-fold, is here described by a close student of Canadian affairs. This is perhaps the greatest single example of the changed economic conditions which mark the present age—an age which will offer the poor man a real chance.

By Walter Noble Burns

CANADA'S new land program, her statesmen declare, will mark an epoch in the economic history of the Dominion. It is expected to build Canada into a nation of 50,000,000 people. How long this will take is a question. Optimists say twenty years; the more conservative fifty years. But once the expected results are achieved, Canada, for the first time, will take the rank among the nations to which its resources entitle it.

American, and particularly California economists, are following with the greatest interest the working out of this tremendous scheme. The plan, which was enacted into a law at the last session of the Dominion Parliament, was first fostered by the Hon. James A. Calder, a Liberal statesman who has always preached that land is the bedrock foundation of Canada's future greatness.

A Great Task

He faced many difficulties when he set himself seriously to the task of building Canada from the ground up. Canada's land problem was complicated. There never had been any uniform legislation governing settlement. Private ownership, federal ownership and provincial ownership added their perplexities. He determined, as his first great stroke in dealing with the land question, to bring about uniform land settlement legislation in all the provinces as well as co-operation between the provinces and the federal government in a general land settlement policy.

"The necessity for the adoption of progressive measures looking toward the rapid increase in the population of Canada is universally admitted," he said when his program was still in an embryonic stage of development. "Owing to changed conditions existing throughout Canada, the policies heretofore pursued in an endeavor to secure suitable immigration have become obsolete and ineffective. The reservation of federal crown lands for settlement by soldiers and the comparative scarcity of suitable crown lands within reasonable distance of railways and other facilities are factors in the changed conditions that must not be lost sight of. Throughout the older provinces the problem of the idle, improved farm and the leased farm is much in evidence. These evils must be curtailed.

"In the four western provinces there are millions of acres of wild lands suitable for settlement, the title to which has passed from the crown. A large proportion of these lands are within a reasonable distance of railways, schools, churches and rural telephone lines, and their rapid settlement is essential to the country's prosperity.

"A lack of co-operation has marked in the past the activities of the federal and provincial governments in their efforts to colonize the vacant land. There has been a waste of effort and a duplication of expense. It is essential to the success of the new program that there be co-operation of all governments concerned.

"It has been contended that, since the available crown lands have been largely alienated for settlement, the problem of settling idle improved farms, privately owned wild lands and provincial crown lands, is one that lies wholly at the door of the provincial authorities. Canada as a whole has too much at stake to permit this view to prevail. The results desired will never be attained unless the federal and provincial governments join in the adoption of policies that will be nation-wide in their application. If Canada is to succeed in competition with other countries, the provinces as well as the Dominion must pledge their credit and meet whatever expenditures are required. Any cheese-paring policy must be doomed to failure."

A Typical Canadian Homestead

Where with the encouragement and financial aid of the State, the settler has built and maintained a comfortable home and accumulated valuable holdings of livestock. California plans to show the people of the United States that similar policies offer the solution of our idle acres problem.

Carefully Planned Program

Calder's first draft of the proposed legislation embodied not only his own best thought but also that of other eminent Canadian statesmen and scholars whom he called into council. In rough outline the plan was threshed out, detail by detail, by an inter-provincial conference which met at Ottawa last November to consider it. In its final form it was endorsed by the conference and was later passed without amendment by the various provincial parliaments.

Canada, for the first time, has practically one uniform land law operative throughout the Dominion. This law is intended eventually to force into cultivation every unproductive acre in Canada, including all wild lands, all privately-owned unculti-

(Continued on Page 80)

vated lands and all idle farms. Private owners either must cultivate their land or sell it to the provincial governments which, in turn, will sell it to settlers. All private uncultivated land already has been surveyed and appraised by government agents. If the owners refuse to sell it at the valuation the government has placed upon it, the government will tax it upon the owner's own valuation. This tax soon will change all unproductive land from an asset into a liability. Calder proposes that his program shall help solve the world's food situation by increased production rather than by conservation.

The new laws will give a settler twenty years in which to pay for his farm, and he will be required to pay down but 10 per cent of the purchase price. His first interest payment at 6 per cent will fall due at the end of the second year; his first additional principal payment at the end of the third year. He will be required to make improvements on his land equal to 10 per cent of the purchase price the first year, 5 per cent the second, 10 per cent the third and 5 per cent the fourth and fifth years. The provincial governments will be prepared to loan him $500 with which to build a home and $1000 additional for livestock and improvements. The $1000 must be paid back in five years; the $500 will fall under the twenty-year plan.

Official Encouragement

The provincial governments will set aside funds to make these loans possible. The federal government will stand responsible for the loans. This will be done either by cash loans to the provincial governments; by guaranteeing provincial land settlement bonds; by joint federal and provincial land settlement bonds, or by lodging with the provinces federal bonds as security for the issue of provincial land settlement bonds.

The question then arises: "Where are the immigrants to settle Canada to come from?"

Many are expected from Scandinavian countries which escaped the devastation of war and in which reconstruction problems will not weigh heavily. Many are expected from Great Britain. A large proportion of Britain's army of 7,000,000 men undoubtedly will be re-absorbed in home industries. But with a love of the country cultivated by their experience out of doors during the war, many English soldiers will want to go upon the land and they will have difficulty in finding farms for themselves in Great Britain. This possibility already has been foreseen by British statesmen, and the government has announced that it will place no restrictions upon those of its soldiers who wish to emigrate to Canada or its other overseas dominions. Emigration to other countries may be restricted or prohibited, but British statesmen are convinced that in assisting the development of Canada and Australia, the mother country is building the future strength of the British Empire.

What figure the United States will cut in peopling Canada's unsettled lands is a question. In the first fourteen years of the present century 2,900,000 immigrants entered Canada. Of these 1,100,000 came from the British Isles and 1,000,000 from the United States.

Canada proposes to play fairly and squarely with the world. It will not attempt to lure, by any undue influence, home seekers from other nations. It will spread no nets, beguile with no false promises. It frankly needs population, and it has the land. By setting forth sufficiently attractive inducements, it expects to find, with comparatively little difficulty, the right sort of citizens.

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WALLIS first combined great power, light weight and durability in a tractor.

The Wallis "U" frame is an advanced idea—the strongest, yet lightest construction known to mechanics. The Wallis weighs 1000 to 5000 pounds less than tractors of equal drawbar power.

Wallis was first to enclose all gears, including the final drive. In the Wallis all materials are the finest—workmanship the best—motor as perfectly finished as that of an aeroplane or the highest grade automobile. At the National Tractor Demonstration, farmers marveled at how the Wallis motor was always cool.

The Wallis gives the greatest return for the money because it does the most work on the least fuel; with the fewest delays; and at lowest up-keep cost.

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Dallas, Tex.
Sioux Falls, S. D.
Des Moines, Ia.
Richmond, Va.
Saginaw, Mich.
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St. Louis, Mo.
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WALLIS TRACTOR COMPANY RACINE, WIS., U.S.A.

DISTRIBUTORS EVERYWHERE.

Douglas Boswell, Sacramento, Calif., Distributor for Calif., Oreg., Wash. and Northern Idaho.

The Canadian Fairbanks-Morse Company, Ltd., Winnipeg, Saskatoon and Calgary, Distributors for Canada.

Made of highest grade steel. Heavily tinned. Smoothly finished. Lighter. Easiest to operate. Easiest to clean. Sanitary.

Write for Circular No. 20

Sturges & Burn Mfg. Co.

Makers of Sturges Guaranteed Capacity Milk Cans

Chicago, Illinois

Sturges Steel Churns

Dependable Pumping Plants

When you install a pumping plant you want water—plenty of water—full rated production and more if possible. And that's what you get when you install

American Centrifugal Pumps

These pumps produce the full guaranteed amount of water and they keep power bills down to a minimum! That's more than a claim—it's a guaranteed fact.

WRITE FOR CATALOG

—which illustrates and describes the entire line of American Pumps and proves their advantages beyond a question. The American Catalog points the way to irrigation efficiency.

We Have Some Open Territory for Live Dealers.

—Horizontal Pumps.
—Vertical Pumps.
—Deep Well Heads.
—Deep Well Cylinders.
—Direct-connected Motor and Pump.
—Motors.
—Gas Engines.
—Oil Engines.

California Hydraulic Engineering & Supply Co.

69 FREMONT ST., SAN FRANCISCO.

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Money In Stump Land

UNCLE SAM says the "K" Hand Power Stump Puller is O. K. Uncle Sam also says turn your stump land into valuable land and produce more. Stump land can be turned into profitable land at a small expense which means more money to you. You are paying taxes on stump land. WHY?

Now is your opportunity

One man or woman singled handed with a "K" Stump Puller can pull from 50 to 150 stumps per day at a cost less than ½ the cost of a horse power machine and about ¼ the cost of dynamite.

NO STUMP TOO BIG FOR THE

HAND POWER **K Stump Puller**

Simple as rowing a boat. No up-keep. Works on hillsides or marshes where horses cannot work. Weighs 171 pounds—easily moved from place to place. Absolutely guaranteed against breakage. Endorsed by the United States Government.

IMPORTANT—To one man in each locality I will make a special money saving offer. Write for it today.

FREE BOOKLET—Simply send your name and address for my free booklet on Land Clearing. It tells many things you should know.

Walter J. Fitzpatrick Box 25 182 Fifth St. **San Francisco, Cal.**

Seasonable Hints

At our request, the Fancher Creek Nursery Company tells Orchard and Farm readers what to do this month with various kinds of nursery stock.

The month of April is a very good planting season for all ornamental shrubs and trees of evergreen nature. They transplant very readily and start quickly on account of the good "growing weather" usually experienced at this season.

There is yet time to plant deciduous shrubs and trees, providing they have been dug from the nursery row and are in a dormant condition. This includes all stock that loses its leaves during the fall and winter months.

April is one of the best seasons of the year for planting palms. Some varieties can be handled "bare-root" during this month and will grow equally as well as balled plants set out at other seasons. This gives the purchaser the advantage of receiving his stock with a minimum amount of transportation expense, as balled plants usually weigh 40 pounds or more each.

All shrub beds, rose beds and areas devoted to plant life should be thorougly cultivated and fertilized this month in order to provide the necessary plant food for the plants during the growing season.

In many sections the spring flowering, deciduous shrubs, such as Spireas, Lilacs and Snowballs, will have finished their blooming period. As soon as this is over the shrubs should be trimmed in order to provide new wood for next season's bloom.

April is one of the very best months of the year for the planting of annuals such as Asters, Zinnias, Salvias, Snap Dragon, Marigold, Daisies and soft bedding stock of all kinds. This does not apply, however, to sections where there is still liable to be frost after this season of the year.

Napier Fodder

(Continued From Page 16)

and curiosity, and after it became known that he was producing a new and wonderful fodder, hundreds of visitors sought his place.

Fully aware of the great possibilities of the plant, he experimented with it at an altitude of more than 2000 feet in Antelope Valley and found that it withstood the cold weather very successfully.

At the same time Mrs. Galbreath was increasing her plantings at Pixley, while at Descanso, Mr. Wagner was preparing to grow a much larger acreage. In all these locations, under different climatic conditions, the plants throve under tremendous yields.

No doubt the next few years will witness almost universal adoption of Napier grass throughout not only California but the entire Southwest.

To prevent birds from eating peas after planting, place the seed in a pail, pour in a little oil of tar and mix until the seed is coated.

Generally a four-ounce bottle will do for twenty pounds of peas. The birds will not scratch seeds so treated out of the ground nor eat them.—Mrs. E. DeL.

Continuous cropping encourages field pests. Crops which are grown year after year on the same land, in addition to producing constantly decreasing yields, are attacked more severely each year by the pests peculiar to each. Prevention is better than cure, and rotation is one form of prevention.

NEW GRASSES

There is never-ending inquiry for permanent and perennial pasture grass to suit all soil and climatic conditions of the Southwest. It is a big problem to find such a grass that will endure the frosty winters, the hot and dry summers, adobe or sandy soil, the damp meadow or dry moss, but, as difficult as it would seem, we are gradually getting closer to the ideal.

Continued experimenting with new importations has brought into prominence several grasses of such merit that to refuse to try them would be to deny yourself much profit.

The **NAPIER** or **ELEPHANT GRASS** has been so much talked about lately that little need be said here. Now that the seed may be had, although in limited quantities, a packet containing about 2000 seeds may be purchased for 25c, and it requires less than 5000 plants to secure the best results from an acre; and within four months there will be enough canes to plant many acres. The first cutting, four to six feet tall, may be made in four months, from planting the seed, and after that every four or five weeks. It endures our winter frosts, growing late into the summer. The crowns survive the summer drought and make an amazing growth with little rain.

It grows readily from joints, which after the canes are hard may be cut midway between the joints; and the canes planted as potatoes. Napier roots may be purchased at **$1.00 per dozen, or, $5.00 per 100, postpaid. Seed per pkt., 25c.**

THE WONDER FORAGE PLANT was introduced by the Aggeler & Musser Seed Company through their 1919 catalog. It has the sorghum sweetness of Sugar Cane, one stool having 57 canes with 161 heads and 12 feet tall would indicate full 75 tons of forage per acre, and may be cut several times during the season.

Five pounds seed is sufficient to plant one acre. Culture is the same as for any other sorghum. **Price of the seed is 75c per lb., or 5 lbs., $3.00, postpaid.**

SMILO GRASS is probably the nearest ideal grass for the range of the Southwest. It grows anywhere, any time. Try it. **Send 50c for one ounce, or $3.00 for one pound,** which is enough for one acre.

SEE OUR 1919 CATALOG

Aggeler & Musser Seed Co.

320 S. SPRING STREET

Phone Main 4545. Los Angeles, Cal.

Napier Fodder

This wonderful stand of Napier or Elephant Grass hay was grown on the H. L. Wagner ranch, Descanso, Cal.

CUTTINGS FOR SALE

Every available cutting was bought up last year. The supply is again very limited and it will be advisable to get your order in early.

Those who bought cuttings by the dozen last season want to buy by the thousand this year. Don't "get left."

For full information and prices address

H. L. WAGNER

Descanso, California.

EUGENE J. SPENCER

And a 2-year-old plant of Napier grass grown from 1-year-old roots, which produced 131 stalks, 12 feet high. This plant was grown from one joint and produced 41 stalks the first year.

Mr. Spencer is the first and largest producer of Napier grass in California; can fill any size order.

Write for particulars to

EUGENE J. SPENCER

610 East 54th St., Los Angeles, Cal.

Special Sale Order No. 93 for Apr. 1919

4 lbs. yellow corn meal or 5 lbs. mixed beans	.35	.25
1 lb. ground chocolate	.30	.24
1 lb. fancy mixed cakes	.35	.25
3 cans sardines; mustard, oil, tomato	.45	.36
9 lb. bag very best flour	.72	.58
4 lbs. Santa Clara prunes or 2 cans peaches	.40	.25
3 lbs. rice, rolled wheat or oats	.30	.25
1 lb. fresh roasted coffee	.40	.26
1 jar marmalade	.45	.38
½ lb. best mixed tea	.75	.40
6 best laundry soap	.36	.28
2½ lb. bag sugar	.27	.24
1 lb. soda crackers	.25	.20
3 cans salad tuna or mackerel	.45	.25
1 pkg. corn starch	.10	.08
½ mountain cutes	.25	.15
1 large can asparagus or pineapple	.35	.23
3 cans tamales or ravioli	.30	.25
1 lb. tapioca or potato flour	.18	.12
1 can hominy	.15	.10
5 lbs. best table salt	.20	.10
24 box safety match	.20	.12
1 lb. Ambro coffee or chicory substitute	.25	.15
3 large fat Alaska herring	.45	.30
3 pckg. Golden Egg macaroni	.30	.20
2 can Del Monte sauce	.15	.10
1 large bottle table sauce	.25	.14
1 lb. can baking powder	.35	.21
1 can Douglas oil	.40	.34
	$9.68	$6.78

A Saving of $2.90.

The weight of this order packed ready for shipment by parcel post is 70 lbs. Send cash and postage. If not entirely satisfactory it may be returned at our expense. For reference we give Orchard and Farm.

Del Morris Sales Co.

2320 MISSION ST., San Francisco.

In writing for Napier grass cuttings or anything else advertised on this page, please say "I saw your ad in Orchard & Farm.

$673.70 FROM HALF ACRE RHUBARB

(675 boxes) first season after planting. Last season I averaged $1.15 per box; to March 10 this season, $2.05. By planting this spring or summer you should get 500 boxes per acre during high prices next winter and at least as much more for the later spring market. Limited number plants for sale. Illustrated Circular Free

W. A. LEE, COVINA, CALIFORNIA.

No More Feed Shortage

for those who plant Napier Grass. Plant an acre now and get your start for large acreage.

Rooted plants or joints, $50 per 1000, $5.00 per 100, $1.00 doz.

Importer and Propagator

MRS. F. E. GALBREATH.

Pixley, Calif.

The Southern Garden

(Continued From Page 5)

late in the season, while the temperatures of the soil and air are not favorable to their proper germination. Some sorts are more sensitive to cold and wet than others and should not be planted until the ground is dry and warm. The seed is sometimes covered too deep or planted too shallow. It should be covered as soon as planted with well-pulverized, fresh earth, pressed firmly over it so as to bring the earth in close contact with the seed and to prevent the drying out of the soil.

TOMATO VINE
Properly staked and tied for maximum production.

As soon as the young plants are large enough to be seen in a row they should be cultivated or hoed as close to the row as possible without injuring the young plants. Then be sure to keep each row free from weeds. When the plants are large enough, they should be thinned so as to stand a certain distance apart in the row according to the requirements of different sorts. The table gives this information. The soil should be cultivated frequently and kept loose and friable so that the air can get to the roots of the plants, but as they develop and the roots spread, cultivation should be shallower, until it becomes a mere stirring of the surface. Frequent cultivation not only tends to conserve the moisture in the soil in times of drought, but also tends to keep the soil at the more even temperature which is necessary for a continual growth of the plant. Vegetables which are continually kept growing and which are not allowed to be checked at any time not only mature

THE WHEEL HOE
is one of the best investments the home gardener can make. It makes possible a much larger garden, which, planted in long rows, requires less work than one set out in small beds.

very much earlier but also have better quality, as they are not so apt to become pithy or "woody."

A great many beginners make the mistake of overcrowding their gardens. This not only tends to make vegetables grow more slowly, but also has the effect of lowering the quality.

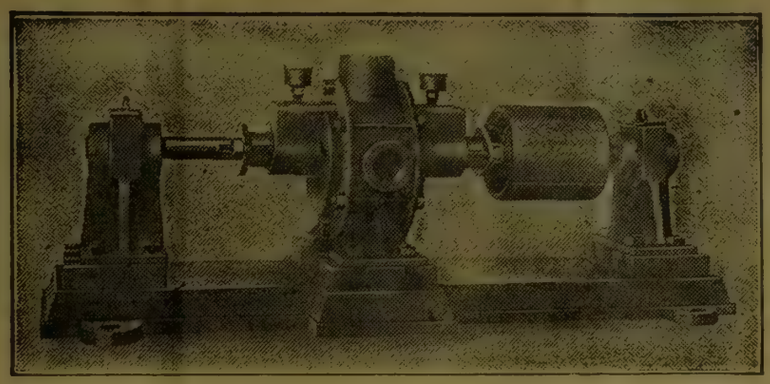
Plant Some Herbs

No garden is complete without a few herbs for culinary and medicinal purposes. The following list of herbs should be planted this month in shallow drills fifteen inches apart and the seed covered very lightly. When plants are two or three inches high, thin to five or six inches apart in the row:

Angelica, Anise, Balm, Sweet Basil, Borage, Caraway, Catnip, Coriander, Cumin, Dill, Sweet Fennel, Horehound, Hyssop, Lavender, Sweet Marjoram, Rosemary, Rue, Saffron, Sage, Summer Savory, Winter Savory, Sorrel, Tansy, Broad Leaved Thyme, Wormwood.

WONDER PUMP

GUARANTEED



5 YEARS

THE WONDER PUMP Is the Most Successful IRRIGATION PUMP

It will pump air and water at the same time.

It will pump more gallons of water for the amount of power used than other pumps.

Why use an old-style pump when you can install a WONDER PUMP and save the price of your pumping unit in a few years?

Seeing is believing. Write us and we will give you a demonstration of the Wonder Pump, free of charge.

PLEASE FILL IN THE FOLLOWING—MAIL NOW

1. I wish to irrigate.....Acres.
2. I want to raise the water.....feet elevation from the pumps.
3. Do you pump from river, lake or well?
4. How close to the water will you place the pump? .....feet.
5. Will you use motor or gas engine?
6. How many gallons per minute do you wish to pump?
7. Would like to have you demonstrate your pump which is free of charge.

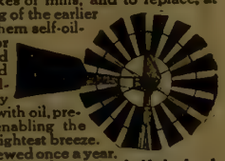
NAME.....

ADDRESS.....

AGENTS WANTED

JACKSON ROTARY PUMP CO., 405 New Call Bldg., San Francisco

THE SELF-OILING WINDMILL
has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load. We make Gasoline Engines, Pumps, Tanks, Water Supply Goods and Steel Frame Saws. **Write AERMOTOR CO., 2500 Twelfth St., Chicago**



"IDEAL" FRUIT JUICES
Make Delicious Lemonade, Orangeade or Grape and Pineapple Cider. Ideal Fruit Juices are made by a process whereby the rich, fruity flavor peculiar to the ripe fruit is fully retained. Bottles to make 10 glasses, 10c; via mail, 13c; one dozen bottles, $1.00; bottle to make 10 gallons, $1.50; large bottle to make 40 gallons, $5.00. Agents Wanted.
American Fruit Products Co.
Importers and Packers. New Haven, Conn.

Kill All Flies! THEY SPREAD DISEASE
Placed anywhere, DAISY FLY KILLER attracts and kills all flies. Neat, clean, ornamental, convenient and cheap. Lasts all seasons. Made of metal, can't spill or tipover; will not soil or injure anything. Guaranteed.

DAISY FLY KILLER at your dealer or 5 by EXPRESS, prepaid, $1.25.
HAROLD SOMERS, 150 De Kalb Ave., Brooklyn, N.Y.

Resists wear and pressure

Mica Axle Grease contains powdered mica, which fills up all roughness in spindles and bearings, makes the grease work better and last twice as long. The grease forms a cool, slippery coating. No hot boxes. Ask your dealer. Buy by the pail.

Standard Oil Company (California)

PIPE

New and second-hand water pipe, all sizes from ½ to 12-in. Well casing, fittings, valves. Phone, write or call for our prices. All pipe put in first-class condition.

UNION PIPE CO., 7th and San Pedro Sts., Los Angeles, Cal. Phone Bdy. 3754

He hasn't forgotten-

No need to tie a string 'round *his* finger to remind him of Ghirardelli's Ground Chocolate—for that's *one* good thing he never forgets.

Nothing more delicious or more nutritious! And nothing quite so handy! A hundred uses in every can—always keep a can on hand!

Ask for Ghirardelli's *by name*—and see that you get it. In 1/2 lb., 1 lb. and 3 lb. cans—wherever you do your trading.

Say "Gear-ar-delly"

Since 1852 D. GHIRARDELLI CO. San Francisco

Ghirardelli's Ground Chocolate

Ranch Homes as Modern As Ranch Equipment

This is the great need of the moment. It is just as necessary that the house-wife have the very latest and most up-to-date house-keeping "aids" as it is to have tractors instead of hand plows in the field.

Wouldn't you rather turn to a *really* restful home, pleasingly furnished, than to find the house boresome and your wife too tired to be civil? Be sure also that your home is a credit to your standing in the community—

Write Today for Free Catalog of "Better Home" Furnishings

A postcard request will bring you *your* copy. 128 pages with illustrations from photographic reproductions; rugs in colors

Dependable home-furnishings only. We pay the freight within reasonable distance and make allowance to farther points.

732 South Broadway **Barker Bros** ESTABLISHED-1880 Los Angeles California

Amazing Facts About Burbank

(Continued from Page 3)

belief was recently expressed by one of the prominent citizens of Sonoma County that even those who lived near him did not fully appreciate his work. "Why Burbank IS Santa Rosa," this admirer asserted. "He has made it what it is!"

While visiting his home I noticed a beautiful silver cup upon the piano in his living room. "Is that a prize you have won with some of your plant creations, Mr. Burbank?" I inquired.

"No, no. Just a little gift from some of my friends," he answered hurriedly, as though anxious to change the subject. Upon being pressed for further details, however, he rather confusedly explained that it had been given him by his fellow citizens upon the occasion of his return from a trip to New York.

"You were away for a long time, then?" I asked.

"No," he smiled; "only a couple of weeks."

From this we may contend that there is, after all, no lack of real appreciation among his friends at home. He is, of course, a part of the every-day life of the people of Santa Rosa, but many of them have seen him but a few times, for he is usually too busy for more than a hurried visit downtown or a hasty purchase at the stores where he trades. Many interesting anecdotes, however, are told by those who enjoy his acquaintance.

Delivered the Goods

One time a local blacksmith, with whom he was on familiar terms, hailed him as he passed the shop. "Mr. Burbank," he said, "I know you've produced about every kind of freak plant imaginable, but I'm willing to bet you have never yet grown a white blackberry."

"If you will come up to the house with me," replied Burbank, "I will serve you some. I have a bush that is yielding now." And, sure enough, he was able to "produce the goods." His white blackberry, although of inferior keeping qualities, is large and luscious.

He formerly lectured a great deal and wrote for various magazines, but as he approaches the sunset of his life he does not find time any longer for this work. Orchard and Farm, in fact, is the only magazine now publishing his writings. I wonder if our readers appreciate the significance of this fact?

Burbank not so very long ago refused an offer of $10,000 a month to deliver daily twenty-minute lectures. He has in his desk requests from some of the leading magazines of the the country for articles at practically his own price, but cannot find time to prepare them. Yet, rather than break the long and friendly relations he has enjoyed with Orchard and Farm, he yet takes time to prepare for our more than 100,000 readers the interesting stories of his work, which we publish from month to month.

Luther Burbank's Home

In this, as well as in the administration of all his affairs, he is ably assisted by Mrs. Burbank, who possesses unusual keenness and business ability and who is conceded to be the one peron in all the world who may be expected to carry on his work.

Luther Burbank's home is not a mansion. It is big and substantial and comfortable, of simple architecture and dependent for its charm rather upon its marvelous setting of plants and trees—probably unsurpassed in variety and splendor by any collection in the world. Yet many of these attractive vines, shrubs, trees and flowers are bringing in big incomes every year.

Nor is the naturalist's home filled with over-decorated hangings and superfluous flashy furniture. It speaks rather of quiet comfort combined with close attention to business. For his study and office open into the living room. This "homey" room owes not a little of its charm to the beautiful paintings of his own products which adorn the walls. Some of the greatest artists in the world have welcomed the opportunity to transfer to canvas the exquisite colors he has imparted to his plant creations.

The Worth of His Work

To see Luther Burbank "on the job" today is to concede that not for many years will he be forced to drop the reins and give up the ceaseless activity that means so much to him and the world. Millions of dollars that have been added to our agricultural resources by the famous Burbank potato and tomato; the Burbank cherries, plums, prunes, peaches, quinces and rhubarb; thousands of flower lovers have been entranced by the exquisite color combinations and remarkable size of his ornamentals.

And ahead lies an unlimited field for the new creations he is constantly turning out. Where, indeed, is the statistician who can estimate the new wealth he has brought to the world?

Burbank has one walnut tree that regularly pays interest on $10,000. Because of this, and similar facts, there are men so short-sighted and splenetic as to accuse him of sordid commercialism. He is indeed selling thousands of dollars' worth of plants, seeds and cuttings every year. But who, in all the world, is more entitled to reward than this man? Who has given so much and taken so little? Who, with such a name and such opportunities, for personal gain works so hard and lives so modestly?

TICKET OF ADMITTANCE to Burbank's Sebastopol Experiment Farm

(Void Unless Dated and Signed by the Proprietor)

Date .....

Signature .....

PRICES FOR ADMITTANCE OF VISITORS during the busy months of APRIL, MAY, JUNE, JULY, AUGUST and SEPTEMBER:

Each Person, One Hour, $10.00 · Each Person, One-Half Hour, $5.00
Each Person, One-Quarter Hour, $2.50

Admittance will be allowed at one-half the above-named prices during the other six months. When there are two or more in the same party twenty-five per cent discount from these prices.

NOTE.—Everybody would be graciously welcomed to the farm, but the burden of entertaining the multitude has become so great that the experimental work has been seriously crippled.

International Fame Entails Many Disadvantages

Not the least of which is a super-abundance of visitors. So many admirers annually make the pilgrimage to Santa Rosa that Burbank, in order to have enough room on his experiment farm to carry on his work, has been forced to issue "tickets of admittance," which must be filled out for each visitor during the busy season.

Federal Crop Report

(Continued from Page 6)

cilities when needed. Furthermore, banks are enabled to provide funds for financing the growing and marketing of crops, without which many farmers would be seriously handicapped.

Helps Producer, Consumer

Manufacturers, wholesalers and retailers base their calculations of requirements and purchasing power of counties and States upon estimates of crop and livestock production, so that many months in advance of the time when farmers wish to buy machinery and equipment the necessary raw materials can be purchased, manufactured and distributed. Probably very few farmers have any conception of the amount of intelligent planning that must be done by those engaged in banking, transportation, manufacturing and commerce based on crop and livestock statistics, in order to enable farmers to obtain the necessary financial assistance for all operations. The more economically these operations can be conducted as the result of Government crop reports, the more cheaply and efficiently can these services be rendered to farmers and all dependent on them.

Some Mistaken Ideas

Many of these advantages would be lost if the Government crop reports were discontinued. One of the oldest and most persistent superstitions which still lurks in the minds of some farmers is that crop reports benefit the speculators and harm the growers, or that in some mysterious way the crop reports have something to do with increasing taxes. Recently a representative from the local Government of Algeria called at my office to ascertain how crop reports are made in the United States, in order that he might install a similar system in Algeria. He said that a great obstacle which is almost insurmountable is the fact that the illiterate native farmers of his country almost universally believe that if they divulge their acreages, crops and number of livestock, the extortionate tax gatherers will increase their taxes and the city speculators will beat down the prices of their products. I assured this gentleman that American farmers are too intelligent to harbor such suspicions.

There is, of course, absolutely no foundation for the belief that taxes have any connection with the data collected by the Bureau of Crop Estimates. All individual reports to the bureau are treated as strictly confidential, and no tax assessor has access to them. Nor is there any foundation for the belief that the Government crop reports benefit speculators more than farmers, other than the fact that individual speculators are strategically in a better position to act and to take advantage of market conditions more quickly than most farmers. Without the Government crop reports farmers would have no dependable source of information regarding prospective supply and probable prices. On the other hand, speculators would still be in a position to obtain reliable information through their own agencies.

Crops are grown in the open and can be observed by anyone who is a competent judge. Speculators and corporations maintain their own crop-reporting organizations and employ so-called experts to visit producing sections in their efforts to obtain advance information. Without Government crop reports as a protection to the farmer, speculators would obtain this information, more completely and accurately than could be obtained by any farmer or group of farmers, and they would issue biased reports for

(Continued on Page 46)

What would we do without parents?

HEREDITY is always a big factor—in seeds as in everything else. Before you can expect healthy, vigorous *offspring*—you must have healthy vigorous *parents*.

Applied to seeds, this means that they must be of proven vitality and proven quality. Yes—pedigreed!

Morse's Seeds *are* pedigreed. For 45 years our seed experts have been choosing for seed production vigorous, healthy parent-plants and have been breeding them scientifically, generation after generation. Accurate records have been kept of this plant breeding and the ancestry—the pedigree—of whatever seed you buy from Morse is clearly and definitely established.

That's why you can be sure of getting in the product of any variety of Morse's Seeds all its particular good quality traits.

And, in addition to being pedigreed, Morse's Seeds are soil-tested to prove germination power and vitality. They are cleaned and re-cleaned. *They are better seeds than even the pure seed laws require.*

You can buy Morse's Seeds in whatever quantity you need—by the 7½ cent packet, the pound, or the ton. You are going to need seeds this year. Write or wire today for quotations in quantity lots.

C. C. MORSE & CO.

OPERATORS OF THE WORLD'S LARGEST SEED FARMS

745 Front Street, San Francisco

Dealers everywhere sell Morse's Seeds—in packets.

Morse's Seeds are pedigreed

WRITE GALLOWAY

For FREE Big Book

Buy Now and Pay Next Fall

It only costs you a postal card to get Galloway's big money saving Book on Gasoline Engines, Manure Spreaders, Cream Separators and other Implements. The close-buying business farmer of today has Galloway's catalog on his desk. He knows Galloway prices and quality. Check up our prices with others. We save you from $25 to $200.

Your choice of five selling plans including long terms. The money you save you can use in a dozen different ways. So don't delay writing for big 1919 "Divide the Melon" money saving Implement Book. 300,000 satisfied customers—many your next neighbor—prove the merit of the Galloway method. Facts are what count. Special patented features on Galloway Implements on no other, yet prices away below. Close by shipping points. Mention implement interested in for special literature. Write today

WM. GALLOWAY CO., Box 332, Waterloo, Iowa

BAGS For All Purposes

New and second-hand. Every bag thoroughly inspected before shipping. Bags for grain, potatoes, seeds, rice, onions, beans, etc. Whether buying or selling, communicate with us.

Speyer Bag Co.

869-873 Folsom St., San Francisco.

Coulson'
Baby Chick
Milk Mash

The Best Feed
for first six weeks

Write for particulars

Coulson Co.
Petaluma, Calif.

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SAMPLES and slightly used. Four floors. Large stock. Liberal credit. Save 50 per cent on some. No branches.
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The Yellow Front. Established 1892.
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TRANSFORMERS—Only transformer factory on Coast building complete line of transformers for all purposes. Gardner Transformers sold under positive guarantee as to serviceability. Deliveries unequaled. Special attention paid to farm and irrigation orders. GARDNER ELECTRIC MFG. CO., EMERYVILLE, CAL.

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Send for our Price List of Lumber, Sash, Doors and Builders' Supplies. We save you middleman's profit.
Contractors' & Builders' Supply Co., 1401 5th St., Oakland, Cal.

Federal Crop Reports

(Continued from Page 43)

the sole purpose of misleading the public to their own advantage.

The Present System

The bureau was reorganized in 1914 and the crop-reporting service has been completely revolutionized since that time by the appointment in each State of a trained field agent to represent the bureau. These field agents are in most cases graduates of the Agricultural Colleges who have specialized on the statistical side of agriculture. They travel throughout their States almost continuously during the crop season, personally observing crops and interviewing the best informed men in each county. They retain a list of crop reporters, who are picked men and who report to them monthly. In their offices they keep on file not only the information they personally collect and the reports of their aids, but census reports, assessors' reports, reports of State Departments of Agriculture and such reports of State and local organizations as they can obtain. The result is that in each State the field agent of the bureau has means of keeping in close touch with crop and livestock conditions in every county, and has records showing what has happened in former years. In addition to the field agents with headquarters in each State, the bureau maintains a corps of crop specialists for such crops as cotton, tobacco, rice, fruits and truck crops, who are technically trained men and who travel throughout the regions where their special crops are grown, disregarding State lines and maintaining lists of picked men to report to them monthly.

Specialized Crop Reports

In the case of truck crops and fruit crops, an effort has been made to estimate commercial production as distinguished from total production; that is, the portion of the crop which is sold from the farm enters commercial channels, therefore really determining the price. This was a long step in advance and will be extended to other crops as rapidly as funds of the bureau permit. For instance, during the coming year it is proposed to estimate the commercial production of potatoes and to issue special reports not only regarding the early crop in the spring but also the main crop in September and October. These reports are to be followed by a special annual report in December in which will be summarized all the potato information collected during the year. Beginning with next December the bureau will report stocks of potatoes on hand every month.

In the past it was deemed impracticable for the bureau to estimate crop and livestock production by counties. However, the demand for localized information by counties has become so great, especially during the last two years of the war, that the field agents of the bureau are attempting to make county estimates in many States. This is exceedingly difficult in some States because of the lapse of time and changes which have taken place since the census of 1910. As soon as the results of the 1920 census are available the entire crop-reporting service of the bureau will be placed on a county basis

Plans for the Future

Singularly enough, much less attention has been given by the bureau to livestock than to crop production. This defect should be remedied and the bureau should be provided with sufficient funds and facilities to issue monthly livestock reports. Following the next decennial census, estimates should be made of poultry and dairy production as well.

Great improvement in the quality of the crop and livestock estimates of the bureau has been brought about by obtaining the co-operation of the best informed men in each community as voluntary crop reporters, the idea being that the reports which come to the bureau or to its field agents shall be from men who know what they are talking about. Necessarily the bureau must depend for its information largely upon the co-operation of individual farmers and associations. In fact, the Bureau of Crop Estimates is probably one of the largest farmers' co-operative concerns in the United States, more than 200,000 farmers and others pooling their information through the bureau in the course of a year.

In this connection I may say that in a number of States, notably Wisconsin, Ohio, Missouri, Nebraska, Utah and Georgia—the bureau has entered into formal co-operative relations with the State Departments of Agriculture with a view to combining forces and facilities, avoiding unnecessary duplication and expense, and issuing a single set of co-operative crop and livestock reports for the State. These arrangements have been exceedingly satisfactory and have resulted in marked improvement. Similar arrangements are under consideration in Indiana, Illinois, South Dakota, Idaho, Kansas and Arkansas.

The California Organization

In California the bureau has three field agents with headquarters at Room 404 Custom House Building, San Francisco; E. E. Kaufman, in charge of all fruit crops and cotton; J. E. Rickards, in charge of livestock and cereals, and R. G. Risser, in charge of truck crops. These gentlemen are co-operating closely with the various growers' organizations in the State, with the State and County Horticultural Commissions, and with the Extension Service and County Agents of the Agricultural College.

In conclusion I will say that the crop-reporting service has expanded and become more useful largely through suggestions received from farmers' and growers' organizations. Such suggestions are always welcomed. In fact, the best way to bring about improvement in the service is for groups of farmers or their representatives to decide what they want and then to make request for it by letter or resolution addressed to their Senators or Representatives in Congress, or to the Secretary of Agriculture. For instance, if the livestock growers believe that there is a need for monthly reports of livestock numbers and conditions, of present and prospective feed supply, of condition of the ranges and pastures, in their own and in competing territory; or if the fruit growers desire monthly reports of condition and prospects of commercial production in counties or in well-recognized districts, both for their own and for competing districts, they should not hesitate to let their wants be known.

A walnut crop valued at $677,145.52 has just been harvested by the walnut growers of Carpinteria and Goleta. The crop totaled 2,623,150 pounds. The actual handling of the crop cost $16.34 per ton, of $23.93 on the cars. The Growers' Association this year cracked 207,899 pounds of walnuts, obtaining 75,825 pounds of meat at a cost of $8583. The crop of last season was valued at $502,005.30

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THE best time to buy a De Laval is when you need it most.

With cows freshened, or freshening soon, you will have more milk to handle.

And with butter-fat at present prices you can't afford to lose any of it.

If you are still skimming by the "gravity" method or if you are trying to get along with an inferior or "half-worn-out" separator, you certainly are losing a lot of valuable butter-fat.

So you see that the combination of larger milk supply and a high price for butter-fat can mean only one thing—you need the best separator to be had

Right Now

The best cream separator you can get is the only machine you can afford to use these days, and creamerymen, dairy authorities and the 2,325,000 De Laval users all agree that the De Laval is the world's greatest cream saver. They know from experience that the De Laval is the most economical machine for them to use.

If you buy a De Laval you will get a machine that is tried and tested and true—a machine that will give you genuine service—and you will get the cleanest skimming, easiest turning, longest wearing cream separator that money can buy.

Order your De Laval now and let it begin saving cream right away. See the local De Laval agent, or, if you don't know him, write to nearest office.

DE LAVAL DAIRY SUPPLY CO.
The Largest Dairy Supply House on the Pacific Coast.
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WIZARD

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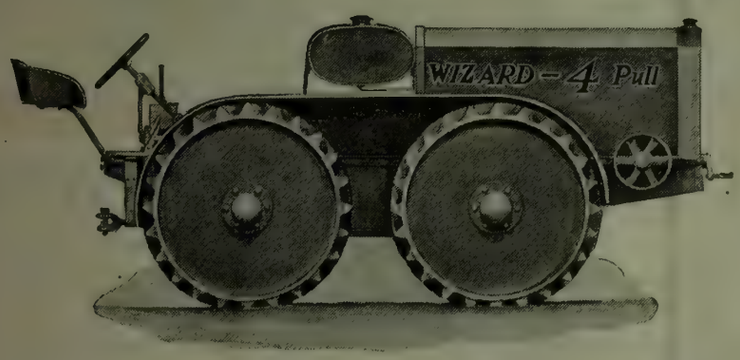
4-PULL TRACTOR



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To be built in sizes

6-10 12-20 20-35 30-50 45-75

THE KROYER WIZARD 4-PULL TRACTOR is built low, yet has spacious clearance under the body, between its wheels. It is short in overall-length, powerful in performance and develops unusual high efficiency in draw-bar pull. It is equipped throughout with ball and roller bearings.

With our experimental WIZARD 4-PULL TRACTOR we have plowed and cultivated the loosest blow-sand land and immediately after plowing same have gone over it again, pulling a full load without slipping the wheels or having the Tractor bury itself. Work of such nature that would in a short time wear out tracks or moving parts on other tractors has no effect on the WIZARD, all its working parts being enclosed in oil-tight housings.

It will work and get traction after rains, snow or irrigating, as soon as horses could be successfully used on the same land. It will operate on peat land and in many sections where soil, difficult to work, is now lying virgin for want of a practical means by which to till it.

The much-desired feature of short turning has been mastered in the Kroyer WIZARD by a device unique in its construction. This is one of its patented features, causing it to turn itself around in a pivotal manner, when so desired, without making any backward or forward movement (as when a man turns himself on his heel) and this can be done in either direction.

It is quick and very flexible in action and operated with ease, making the handling of the WIZARD 4-PULL light work. The weight is distributed equally on all four wheels when pulling a load, and it does not pack the soil.

Mr. Kroyer, being a pioneer tractor builder, knows, however, that no new principle embodied in a tractor makes, in itself, a perfect machine. Experience must be built into it throughout from the point where it touches the ground to the top of its hood. In other words, a master mind in tractor construction must be the foundation for producing a tractor that is actually successful. This ability Mr. Kroyer possesses, being a practical man and having designed, built and marketed seven different models of Tractors since 1903. As early as 1904 he built in his second model (size 8-16) an enclosed dustproof machine, and into his fifth model (size 15-30), built in 1913, he used the live rear axle principle in an all enclosed dustproof tractor. Over 3000 of Mr. Kroyer's Tractors are in use on the Pacific Coast and in other countries and they are regarded as the most durable tractors in the field.

The WIZARD 4-PULL will be a "quality" machine and built to give at least ten years' service when used with reasonable judgment. It will be distributed and sold conscientiously. Orders are held for 1200 of the 12-20 WIZARDS for California, with strong demand for the other sizes, and deliveries are expected to begin this fall.

The WIZARD 4-PULL TRACTORS will be manufactured by the Kroyer Manufacturing Co., a $5,000,000.00 corporation, with its plant located at Stockton, California, an additional Eastern factory being also contemplated.

STOCKTON, CALIFORNIA

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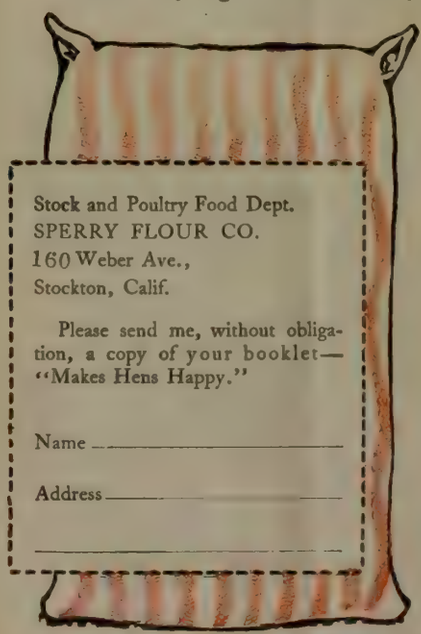

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And that's exactly what you do when you feed Sperry Suregrow. For, it gives your growing chicks just what they need to develop properly. More than that—it gives them the *physical foundation* that means good layers and good breeders—and, incidentally, *good profits.*

And—don't forget this: the money you invest in Suregrow will come back to you many times over in the increased health and vigor of your flock. It's surprising how many chick troubles—indigestion, moping, slow growth, etc.,—all disappear when you feed this balanced ration! For, Suregrow is the one feed you can depend on *absolutely* to produce a good, sturdy growth—a growth that goes a long way toward future profits!

STOCK AND POULTRY FOOD DEPARTMENT

SPERRY FLOUR CO.

STOCKTON, CALIFORNIA

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May, 1919

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ORCHARD and FARM

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Citrus Problems
By Robert W. Hodgson

Offices
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Three Articles on Goat-Raising

Like the teeth of a buzz saw!

YOU'VE stood in awe before a buzz saw and watched it literally tear its way through a piece of material. Being driven at such a terrific speed, it produces results that are almost startling. But if you were to run the buzz saw at a much slower speed, and take some of the keenness off of the teeth, then you would have an action very similar to that of road bumps, ruts and rough places as they rack, strain and wear out your Ford Car or Ford One Ton Truck.

The thousands of sudden, heavy impacts, while not sufficient to cause instant breakage, yet cause great and unnecessary wear on all parts, particularly the power unit and the tires.

It has been proved by nearly a million Ford owners that by properly cushioning their machines against road shocks and vibrations with Hassler Shock Absorbers, that you save at least 30% of the ordinary tire and repair expense, and that your Ford's depreciation is decreased a like amount. You also obtain considerable increase in gasoline mileage, due to the smoother running. Hasslers prevent squeaks, rattles and deterioration, for the spiral, conical springs of chrome-vanadium steel compress on either upward or downward movements.

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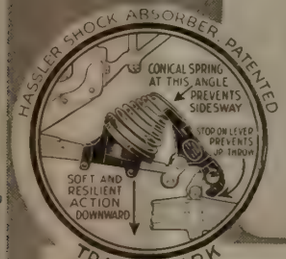

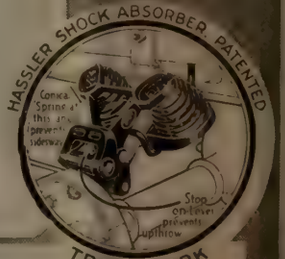

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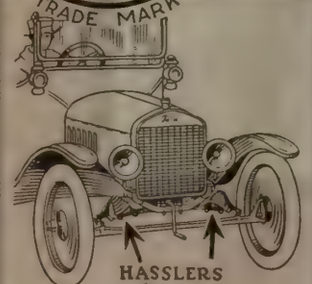

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ORCHARD and FARM

VOL. XXXI. MAY, 1919 NO. 5

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Every Agriculturist a "Truck" Farmer

By Albert J. Mason

THERE are some farmers who are not worrying much about railroad service. Aladdin had nothing on these fortunate producers. Instead of rubbing a lamp, they touch a button, and the Automotive Genie instantly responds, ready to transport their produce quickly and cheaply to nearby markets. Perhaps the genie, in another form, is already tilling their fields; in still another form he transports the families to church or the movie or a party. The coming of the motor truck, as an important factor in agricultural production, was merely a broadening of the service of this willing slave, already enlisted in the service of American food producers. And with the establishment of rural express lines, the railroad problem ceased to trouble many of our agriculturists.

No farmer can know what a motor truck will do for him or in how many undreamed of ways it will benefit him until he has bought and used one. Even then he will not know definitely just what it means to him, even in dollars and cents alone, unless he has kept cost accounts while using horses, and keeps accurate records of the cost of operating the motor truck. Accustomed to the use of horses for haulage, as well as for work in the field, he is likely to labor under the erroneous impression that it costs very little to haul his loads to market or to the railroad by wagon.

An investigation made recently by the United States Bureau of Crop Estimates developed some very enlightening facts along this line. The data are based on 898 county reports, covering the year 1918, which mentioned the use of motor trucks in hauling from the farm to shipping points. These reports disclosed that the average length of haul by motor truck was 11.3 miles, while that by team was nine miles; that the average number of round trips per day by truck was 3.4 against 1.2 by wagon, and that the average truck load was 58 bushels of corn on the cob and 84 bushels of wheat, as compared with 39 bushels of corn and 56 bushels of wheat per wagon load.

Cost Data Available

But it is of even more importance to know that the average cost of hauling by motor truck, as shown by the reports to the Bureau of Crop Estimates, was 15 cents per ton-mile for corn and wheat as compared with 30 cents per ton-mile for hauling corn by wagon. That is, it costs only half as much to haul by motor truck as by horse and wagon. These figures, it is to be borne in mind, are averages for all sections of the United States. The average cost of haulage by truck was notably less in the New England States and in the Central States east of the Mississippi River and higher in the Western States.

The trucks used by farmers usually were of one to two tons capacity, and in many instances were converted passenger cars. Trailers were used frequently to increase the capacity, and in North Dakota and California and some other States tractors were employed, drawing several wagons. Haulage of grain did not constitute the principal use of trucks, as light machines were most frequently employed for transporting perishable produce, poultry and eggs and dairy products. The haulage of hogs, sheep and cattle to market in motor trucks has become common in many States, and in some counties hogs are hauled exclusively in trucks. Special advantages in hauling livestock, milk, fruit and vegetables by motor truck are that they arrive in better condition, there is less shrinkage and deterioration, and they command higher prices.

Much Livestock Haulage

The United States Department of Agriculture, which has recently been investigating the extent of motor truck transportation to the livestock markets, found that the improvement of the highways and the use of motor trucks had greatly extended the territory from which livestock was hauled to market by highway, and that "drive-ins" by motor truck had increased largely in the last year or two.

The Cincinnati, Louisville and Indianapolis markets receive a large part of their hogs directly from the farmers by truck. At Omaha, during the first nine months in 1917, the drive-in of hogs amounted to 52,129; in the corresponding period last year 142,220 were delivered by truck—an increase of 170 per cent. The cattle drive-in during July, August and September, 1917, was 12,189 head, and in the same quarter of 1918 was 17,681 head. One morning last winter, between 5:30 and 8 o'clock, forty trucks delivered livestock at the Omaha yards, and of this number nineteen of the vehicles were owned by farmers.

A marked increase in the drive-in at Kansas City has resulted from use of the motor truck. During the first eight months in 1918, 72,887 hogs were delivered by truck and wagon, an increase of 21,505, or more than 40 per cent, over the same period in 1917. At Denver the receipts of sheep by drive-in during the first eight months last year showed an increase of 223 per cent over the same period in 1917. The receipts of livestock at St. Joseph, Mo., last year by truck more than doubled those of the preceding year. In a single day at St. Joseph last year 190 motor trucks delivered 1400 hogs, 200 cattle and a considerable number of sheep.

The radius for drive-in consignments has been greatly widened. Whereas the movement of livestock to the yards by wagon and on hoof during the last forty years was from distances of five to twenty-five miles, the hauls of motor trucks are now from distances up to fifty miles or more. A number of commission firms now cater particularly to less-than-car-load shipments made by truck, and their business is increasing because many farmers are buying trucks especially for delivering livestock. Motor trucking companies have been formed in many cities and towns within a radius of fifty miles from Omaha to meet the demands of farmers for such service. These companies are not only developing the livestock trade, but haul farm supplies, groceries and general merchandise back from Omaha to the farmers and local merchants.

Rates charged for hauling stock vary with the distance, some companies charging a flat rate of 25 cents per 100 pounds and adding 1 cent per 100 pounds per mile. Others charge by the load from $10 to $15 for the trip. The customary charges at the Cincinnati market are from $15 to $30 for a large truck covering 15 to 40 miles. While the rates are high, the service is profitable to the farmer. A two-ton truck will carry about 20 hogs, but the truck companies as a rule operate trucks of four or five tons capacity. These are often double-decked to carry hogs or sheep. A typical double-deck load at the Cincinnati yards consisted of three 850-pound cattle, seven 150-pound calves and eleven 185-pound hogs. Another truck carried seven 750-pound cattle, while other loads were made up of from 10 to 25 hogs weighing from 175 pounds to 225 pounds each.

Less Shrinkage En Route

One shipper at Cincinnati reported to the investigator for the Department of Agriculture that he hauled 25 hogs 43 miles in four hours and that the actual shrinkage of the hogs was only from six to ten pounds each. Fat stock travels in greater comfort by motor truck, and it is not so long on the road as when shipped by rail. Another important advantage is that the stock can reach the market before a price drop takes all the joy out of a season's profits.

With more general and rapid construction of good, durable roads, the department investigators believe that the future promises cheap and efficient marketing of stock in motor vehicles.

Marketing Perishable Produce

While the Agricultural Department was not reported on the haulage of fruit, vegetables, poultry and dairy products by motor truck, it is well known that great quantities of such farm products now find their way to market in motor trucks. Much of the hauling is done by farmers in their own trucks, but in the last two years there has been a great development in the United States of rural motor express lines operated by individuals and companies to perform this service for the farmers. This system has great advantages for the farmer, as it enables him to remain on the farm and increase production instead of spending time on the road. He also finds it cheaper than to do his own hauling, and can make daily shipments of small quantities that he could not profitably haul in his own wagon or truck. With the present difficulty of securing good help and the high wages demanded, his time is far more valuable on the farm than on the road.

Berries, soft fruit, delicate vegetables and milk and cream reach market in a few hours by motor truck and are in fresher condition than when shipped by rail or hauled in by team; consequently they command the highest prices. The rates charged by the motor express companies are about the same as or a little less than railroad express rates, and the produce is picked up at the farmer's gate and delivered direct to the commission house in the city.

A dairy farmer in Northern California covers a 25-mile route daily with a motor truck and reports that he does it in half the time formerly required by team and at one-half the expense. Another delivers daily to a town 18 miles distant which he would not be able to reach at all with a team, as it would take 24 hours for the round trip, which he now makes in eight hours by motor.

Innumerable examples of advantages in time saving, decreased cost, larger profits and increased production resulting from the use of the motor truck might be cited, but the facts herein presented should be enough to enlist the interest of the farmer and set him to studying and investigating the direct personal benefits he might gain from the use of a motor truck. There is obviously more need of personal means of transportation in the rural sections than in the city, both passenger and freight, because of the greater lack of railroads and street railways. Just as the Middle Western States of the United States have many more passenger automobiles in proportion to population than the more densely populated Eastern States, so it will be only a few years before the same condition will prevail with regard to motor trucks.

The Marketing of Livestock

Is being revolutionized by the increasing popularity of the motor truck and the establishment of rural express lines throughout the country. By making the "short haul" longer, the truck has released the railroads from much unprofitable local business and thus brought about conditions permitting the improvement of service on long hauls.

Pertinent Problems of Citrus Culture

A brief discussion by a well-known citrus authority of vital subjects which are of timely interest to every producer. The writer makes no attempt to give an exhaustive treatise on each subject. He merely airs, in an informal manner, certain obscure angles of questions which are now in the foreground. Our many readers who are engaged in citrus production will find much of interest and practical value in this article.

By Robert W. Hodgson

THE importance of bud selection in citrus growing was indicated nearly ten years ago by investigators from both the U. S. Department of Agriculture and the State University. And that the recognition was practically coincident is shown by the fact that in 1909 both institutions began their public work. At that time A. D. Shamel of the Bureau of Plant Industry undertook the preliminary survey of orchards, which furnished the basis for his later work in variation and selection. In the fall of the same year, at the annual convention of fruit growers, Dr. J. Eliot Coit, then stationed at the Whittier Pathological Laboratory and now Farm Adviser for Los Angeles County, called the attention of growers to the necessity for bud selection if the standard varieties as they then existed were to be preserved.

Necessity For Bud Selection

An Erroneous View

Nearly ten years have been spent in observation and study of citrus bud selection. At first the investigators dealt almost entirely with the idea of conserving existing varieties, but the viewpoint has since veered around, at least in the mind of the average grower, to improvement of varieties. That the latter view is erroneous, I shall endeavor to show later.

We must not conclude, however, that the ten years have been spent in vain. On the other hand, the work has served to awaken the progressive growers to an understanding of the importance of the subject. The Exchange has even organized a department to handle selected buds for the benefit of its members. But in the extensive publicity given to the subject of bud selection, the writer sees a danger. It appears to him that a great deal more has been claimed for bud selection than is justified by the available data. And the danger is that facts which are already clear to the scientist as to the true function of this practice will become evident to the layman, with the result that he may be much disappointed.

If bud selection is worthy of consideration, it should stand upon its own merits. No false hopes should be held out to citrus growers as bait for inducing them to adopt the practice. What should be the purpose of bud selection? How far can it go? Can we really hope to improve our citrus varieties by such means? Have we been able to do so in ten years of work? Is bud selection really of value? Questions like these need answering, in the minds of many growers.

There is not one iota of evidence to show that ten years of bud selection has resulted in a single improvement in our standard varieties of citrus as they existed a decade ago. The truth is that exhaustive investigations carried on with many kinds of plants as well as animals during the last hundred and fifty years, in attempts to unravel the intricate problems of variation and heredity, have shown that the chance for improvement of a variety through this practice is something like one in 10,000.

In other words, out of 10,000 propagable bud mutations which might occur, only one would likely be a distinct advance in or addition to the parent characteristics. And even then this addition might not and probably would not represent a desirable quality from a commercial standpoint. Moreover, for every propagable bud mutation which might occur, there are literally hundreds which are fluctuating and incapable of propagation. The chance for the improvement of our citrus varieties through bud selection, as can be readily seen, is, therefore, almost negligible. Moreover, the phrase so commonly heard in connection with bud selection, "citrus fruit improvement," is, properly speaking, incorrect and misleading. We have, in reality, but little hope of improving varieties by this means.

I do not wish to convey the idea that the work done on bud selection in the past has been of doubtful value. Indeed, I believe that, even if it had accomplished nothing more than to call the attention of citrus growers to the desirability of propagating trees from the best strains only, it would have justified the expenditure of time and effort. But it has a greater mission than this, and that lies in the preservation of our standard citrus varieties as they came to us. If there is one thing about these varieties which we have learned in our rather brief experience with them, it is that they are constantly breaking up into inferior and degenerate strains and types. While this condition apparently holds for most of our varieties, it is particularly true of the Washington Navel, which in the forty-odd years we have known it has given rise to at least a half dozen distinct strains, some of fair quality, others very inferior, but none better than or even as good as the original type.

There is strong evidence that the navel orange, at least, is a natural hybrid which is constantly breaking up into inferior forms by the process known as "somatic segregation." In certain other varieties, notably the Valencia orange, there seems to be a curious physical intermixture of different strains, with the result that all sorts of variations may occur.

The value of bud selection lies, then, in the preservation of our varieties as they come to us. Deterioration has occurred continuously since they were first propagated in this State. It is conservatively estimated that at the present time 25 per cent of our orchard trees are "off" types and do not pay their keep!

What Selection Will Do

The true function of bud selection is, then, not only to provide for the propagation of trees from the best strains for future planting, but also to eliminate the unprofitable trees in our bearing orchards, which keep so many growers from making the profits they should realize.

But bud selection will not prove to be the cure for all evils, or even those which apparently have to do only with the yield. The bud is merely one link in the chain of factors which determine the potential profit of a tree. The bud represents the inherent qualities, and, as every one realizes, of no less importance are the environmental conditions. Among these may be classed the soil, the climatic complex, the stock, and others. Each and every one of these factors must be sufficiently favorable or the tree will fall far short of what it might do. Bud selection has been over-emphasized in the past. It is of great importance, but of no less importance are these other factors, as investigations now under way will, no doubt, indicate in the future.

Summer Cover Crops

CONSIDERABLE concern as to crop prospects is already manifest and, of course, whenever this subject is mentioned the discussion turns to the control of the "June drop." There is still apparently doubt in the minds of certain growers as to the possibility of aiding in the setting of a crop through the use of the summer cover crop. For the benefit of those who desire figures the following table is given. The results were obtained from an experimental planting to a summer cover crop in the spring of 1918 of forty-five acres located near Bakersfield, Cal.:

Lot.	Yield 1917. Field boxes	Yield 1918 Field boxes	Per cent Increase
2	173	667	285
17-18	781	1415	81
32	145	767	429
54	14	347	2378

Check Plots—Not planted to summer cover crops at any time:

31	89	104	16
15	375	257	*32

*Decrease.

Explanation of Table

The phenomenal increase in the case of lot 54 may be explained as due to two factors, first, this orchard is just reaching the bearing age, and second, the lot composes a rather small acreage entirely isolated from the rest of the planting, and thus in the past subject to the desert environment in all its extremity, unmodified by the influence of adjacent plantings.

Lots 31 and 32 are of exactly the same area; the trees are of the same age; the contour of the land is similar, and the trees are comparable in every way.

Summer cover crops may be grown in citrus orchards for at least two purposes. One is to provide for the building up of the soil through the addition of organic matter; another (of interest to the growers of navel oranges particularly) is to aid in the setting of satisfactory crops of fruit.

What Crops to Use

For the first purpose alone there is probably no better crop than the cowpea or black-eye bean. This crop makes a luxuriant growth and is relatively low in its water requirements. In addition, being a legume, it is not a heavy drain on soil fertility. For the development of the largest tonnage, this crop should probably be planted no later than the first part of May. It is hazardous to plant it much earlier than April on account of the fact that it requires a rather warm soil for successful germination. Early plantings often result in a poor stand. Both the Clay and Whippoorwill varieties have proved very satisfactory. The common field cowpea is also good, but does not produce so heavy a tonnage. Other crops which have been tried out in a small way and which will be given

(Continued on Page 29)

Six Months to Pay for Your Bonds

THE Victory Liberty Loan is here. It is the best bargain of all of America's stupendous war security issues, as financiers and economists agree. It is also the last of the Liberty loans.

The loan is for $4,500,000,000, supported by notes carrying 4¾ per cent interest and liberal tax exemption features. These are convertible into notes bearing 3¾ per cent interest virtually free of taxation. The first will be more valuable to the poor man. The rich man will buy the second. Both series mature in 1923, but the Government has the privilege of calling them in in 1922. The early maturity of these notes makes them a prized investment.

In order to get wide distribution of the Victory Loan among the rank and file of Americans—in order to get these notes into the humblest homes—the Government will sell them on time. The man who buys a Victory Note will have six months to pay for it. In other words, the Government does not want the banks to take the loan even if the banks could.

Six months to pay! Think of the years these boys of ours who have come back without legs or arms or eyes, are going to pay! Is there a man among us who calls himself an American who cannot take his share of this loan under these terms? Can that man face these armless and legless fellows and tell them why he is not taking his share?

Men and women! This is the last Liberty Loan. Let's stand shoulder to shoulder—Americans all—and finish this war job that those who died shall have died not in vain.

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Intensive vs. Extensive Grain Farming

By Hardy W. Campbell

IS IT not better and more profitable to raise a large crop on a small field than a small crop on a large field? I have seen 56½ bushels of wheat per acre harvested from 40 acres, when large, near-by fields did not make 10 bushels per acre. All had the same kind of soil, same rain, and same sunhine. Then why so wide a difference in the results? Simply because of the mannef and time of fitting the land and the amount of seed sown.

In 1896 I saw 560 bushels of barley threshed from 10 acres of land near Lisbon, North Dakota, when hundreds of acres in the same locality did not yield five bushels per acre.

In 1901, under my personal direction, there was grown on the J. P. Pomeroy farm at Hill City, Kan., 60 acres of wheat that yielded 42½ bushels per acre, when all surrounding fields produced from nothing to seven bushels per acre. During the past eighteen years I have seen hundreds of similar contrasts; therefore, I am discussing this question from a knowledge of facts and not from a theoretical standpoint.

Same in All Localities

I have observed hundreds of fields in all parts of the West in all degrees of preparation, and in every case the results obtained were in proportion to the work and care bestowed. This points to the plain fact that nature has provided a necessary, fixed physical condition that must be attained in all soils in order to secure best results in growth and yield. This condition is reached when the farmer makes the most of available water, air and heat and so controls these factors as to bring them into harmony.

Back of all we can see there is eternal wisdom working through laws unchangeable and inflexible. Nature is cruel, because she must be. She coaches you to high expectations by timely rains and ideal weather; then she betrays the crop with drouth and extreme heat just because you have not intelligently done your part. You cannot change Nature's ways, but you can so utilize the agencies she provides as to absolutely and very materially affect the crop yield.

Not only can short crops and crop failure be eliminated by scientific tillage, but large crops may be made to grow under the same natural conditions and on the same land where crops have failed. Science can and will, if the farmer will do his part, overcome crop-growing difficulties just as fully and surely as it has the difficulties in many other branches of research. If men would and could do all that science could teach them to do, California could easily feed all the people in the United States. Mr. California Farmer, why gamble longer with your fields? Why longer trust Nature alone to give satisfactory results? Why not go after maximum yields with scientific tillage?

Here's Some Evidence

Illustrated below is a barley field south of Stockton on irrigated land, grown in 1918 from 70 pounds of seed. As may be seen, this is a good crop, but contrast this with No. 1.

The upper picture is of a barley field adjoining, also irrigated. This crop, however, was grown from 10 pounds of barley, sowed with 25 pounds of vetch, inoculated. The grain yield of this field was nearly 12 bushels more per acre. Does not such evidence point very clearly to the fact that there is muc considered outside of mere p planting and trusting to Natur results?

ABOVE
A striking illustration of the productive power of a single grain and strong evidence of the advisability of thin seeding. The 48 heads of barley illustrated all grew from one seed and produced, by actual count, 4286 berries, or six and one-half ounces of grain.

This rate of production, if maintained throughout an entire field, would result in a yield of 357 bushels per acre. Impossible, you say? Mr. Campbell believes not. He maintains that man can and will so control the factors which enter into crop production as to bring about just such astonishing results. Science has accomplished things no less wonderful.

BELOW
A contrast in yields of irrigated barley near Stockton. The lower photograph illustrates a field which was seeded at the rate of 70 pounds per acre.

The upper picture shows an adjoining field seeded at the rate of only 10 pounds to the acre, which produced 12 bushels per acre more of grain. With the grain in this field was sown 25 pounds per acre of inoculated vetch. This illustration is offered as an example of intensive farming contrasted to ordinary methods, and shows what can be done by giving close attention to ALL FACTORS which may enter into the control of production.

The illustration at the top of t page is of 48 heads of barley grow from one grain in field No. 1. These heads contain, by actual count, 4286 grains, 6½ ounces. The big yield obtained as a result of careful tillage, light seeding and the use of inoculated vetch, was due, it will be seen, largely to the big production of individual heads and to the stooling of the single grains of seed.

Teaching the Youngsters

We are now making practical demonstrations of good tillage among California school children. Through the medium of boys' and girls' agricultural clubs many important lessons have been taught and learned. In many cases the parents are reached most quickly through their sons and daughters. The lessons learned by practical demonstration are not easily erased from growing minds.

I am conducting, through the cooperation of the agricultural teachers in 19 California schools some interesting wheat experiments. Over 300 boys and girls have planted 40 grains of wheat each, in two rows 24 inches apart, dropping the grains six inches apart in the rows, thus using 48 square feet of land for each 40 grains. The soil was carefully fitted, the surface kept continuously cultivated, and no other vegetation allowed to grow. In some cases 10 to 25 plots are grouped, each student preparing, planting and cultivating his own plot. A recent trip of inspection developed the same marked contrasts found in the average farm field.

In numerous instances we found one plot that could not score more than 10 out of a possible 100, while an adjoining plot would indicate almost a perfect stand and a possible yield fully 10 times as great. Never have we seen such practical and positive evidence that scientific tillage is the key to increased production and certain prosperity.

Possibilities of Thin-Seeding

With barley planted in rows two feet apart, with one grain every six inches in the rows, there would be required 4¼ pounds per acre. A yield of one ounce of barley from each grain thus planted would mean 55 bushels per acre, while 6½ ounces from each grain (which is the yield shown in the upper illustration) would mean 357 bushels per acre. These may be large figures, but please do not smile too sarcastically, for the possibilities may not be far below this figure. When we get down to the real scientific principles that are involved in the preparation, seeding and cultivating of grain planted thus in rows, the results here indicated will be no more phenomenal than the results obtained through other scientific research and characterized in electricity, the phonograph, the wireless telephone, the automobile or the airplane. And the only reason that the average farmer is still skeptical regarding the great possibilities in the production of our average soil when properly fitted, seeded and cultivated is that he has not repeatedly seen the results and discussed the pros and cons. When this is the case, his doubt and skepticism will be completely subdued.

Continued on Page 28

A Hen for Each Tree

THE combination of poultry and orange raising is very profitable because one is beneficial to the other and the operator receives two different incomes.

When I purchased my grove it had a very large barn on it which I did not need. By putting in partitions and making the pens large enough to accommodate two hundred chickens each, I converted it into a very satisfactory poultry house.

The expense of fixing this up was very small and I thus provided housing room for several hundred chickens by making use of a barn that otherwise would have remained vacant.

If an efficient system is worked out there is time to care for both grove and poultry. I have my feed mixed at the mill, for which there is no extra charge. I put the mash in the feed hoppers and leave it before the chickens all the time.

The watering problem is solved with automatic water fountains. Sprouted oats is fed in the morning and mixed grain at night.

Marketing of Products

Buyers come and take my poultry products from the ranch and pay cash, which relieves me of the necessity of finding a market for them. This system, combined with delivery to my ranch of feed, gives me time to care for 1000 chickens and ten acres of orange grove, and I do all the work necessary in caring for the grove, with the exception of cultivating.

Mutual Benefits

The chickens need shade, which the trees furnish. Moreover, the hens keep the orchard cleared of grubs.

Some of my chickens roost in the trees which I find does not do either any harm. If too many hens persist in roosting in one tree I put props under the branches to protect the tree.

The chickens are sometimes attracted by the blossoms and will eat them. In this case I put wire fencing around the tree or keep the chickens corralled until the bloom has dropped; after that they never bother either the green or ripe fruit.

Valuable Fertilizer

A hen produces about 100 pounds of droppings and litter a year and one hundred pounds of droppings to a tree a year is sufficient to keep it in the best of condition. Chicken manure is one of the best fertilizers that can be put on a citrus tree and quick results are always obtained by its use. There is at present such a demand for chicken manure for citrus groves that it is almost impossible to secure it at a reasonable price.

I believe it is better to put the manure on the grove as soon as it is removed from the houses.

Care of Grove

I planted melilotus between the rows of trees and plowed it under March 1st. About April first I planted black-eye beans down the center of the rows, leaving enough room on each side of the trees for irrigation. When these beans are about ready to bloom I shall irrigate and turn them under, doing this while the soil is wet in order to hasten their decay.

If a freeze should cut down the income from my grove, the chickens will help to carry me over the following year. As all orchardists know, the expense of the grove goes on whether there is a freeze or not. That is where the hens pay. — W. D. Swartzel, San Gabriel, Cal.

To "Gas" the Ground Squirrel

Many different systems of squirrel and gopher extermination are now in use. One frequently employed is the carbon-bisulphide method. The following directions were compiled by the State Horticultural Commission. Squirrel and gopher extermination should not end with the cessation of rains. The early summer "drive" is now on!

Carbon bisulphide, if applied to squirrel burrows when the ground is fully saturated with moisture, is by far the most satisfactory material to use. Waste balls soaked in liquid are sufficiently loose to allow vaporization of the carbon bisulphide.

The liquid is most easily handled in an open bucket or pail. Fill the pail about three-fourths full of the carbon bisulphide and place in same enough jute waste balls to be covered by the liquid. To prevent evaporation, a thin film (one-quarter inch) of water can be poured over the carbon. Each waste ball holds sufficient carbon bisulphide to form a gas capable of killing a squirrel.

Specific Directions

Waste balls can be taken from the liquid by means of a hook, pointed stick or forceps, using one waste ball to each burrow. After introduction of the waste balls a sufficient period of time should be allowed to elapse to insure proper vaporization of the liquid. This will depend upon weather conditions. For instance, a warm day would call for a wait of four or five minutes; a cold, damp day as long as ten minutes. This period can be utilized for placing balls in other burrows. Following the waiting period a match or torch can be applied to explode the gas formed.

A good torch can be made by hooking a waste ball on the end of a stiff wire and dipping in carbon bisulphide or kerosene. Such a torch will burn for some time. The explosion will tend to force the gas to the more distant recesses of the burrow, thus insuring better distribution of the gases formed by the explosion.

Immediately following this treatment, every burrow should be sealed with damp earth and very tightly tamped. Carbon bisulphide should be used only when the ground is sufficiently damp to prevent the gas from escaping through cracks or porous earth. When properly applied it will produce results not approached by any poisoning method.

Exceptional precautions must be observed to keep fire away from containers holding carbon bisulphide. It is extremely explosive.

Oranges and Oil

By Jason Wells

OIL, more oil!—that the wheels may turn
And the tractor motors roar.
Oil, more oil, that the fires may burn
And the ships touch every shore.

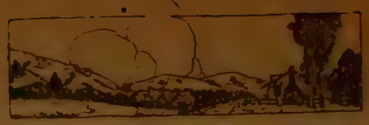
THOUGH the cream of the orchard lands be searched,
Though fruits be blackened and blossoms smirched;
Though the foul fumes spurt where the song-birds perched,
The cry of the world is, "Oil."

OIL, more oil, for the hungry maws
Of the furnace and the torch.
Oil, more oil, with never a pause.
Let the hot blasts sear and scorch!

FOR what is an acre of beautiful trees,
Or a derrick, stark, where hummed the bees?
'Tis not these things that the mad world sees,
When lured by the lust for oil!

OIL, more oil, and perhaps 'tis well
That the ugly pipes be laid.
Oil, more oil, though the depths of Hell
Be tapped, let the price be paid!

FOR fuel is power and power is bread,
And a hungry world must still be fed,
Though smiling fields be torn and bled
While we worship the God of Oil.



Help the Busy Bee

TOWARD the beginning of the main honey flow the beekeeper's problems increase. It is now essential that each colony be prevented from reducing its working force by swarming and that its instinct to store and gather honey be kept dominant. During the period of preparation, the instincts of the bees are in harmony with the desires of the beekeeper, but during the swarming season the instincts of the bee are directly opposed to his interests. Any breaking up of the colony and reduction of the working force by swarming brings a corresponding reduction in the amount of surplus which may be obtained from that colony. Therefore it is to the beekeeper's advantage to prevent swarming in every possible way, and if swarming still occurs, to care for the swarms so that as much as possible of the original large working force may be kept together and may continue storing honey.

Space an Essential

The improper understanding of these problems no doubt causes the loss of more honey and has more to do with the low average production than any other factor. The study of these problems is important for those who wish to keep bees commercially. The usual methods of swarm prevention are concerned to a large extent with the supplying of room—room for brood rearing, and room for the storing of surplus honey. This is fundamental.

Many beekeepers fail to supply enough room for these purposes, and probably no beekeeper supplies too much. During the period of rapid brood rearing, crowded conditions quickly result if a single hive body is all that the colony has in which to develop. If headed by a good vigorous queen a normal colony needs at least two 10-frame hive bodies for brood rearing alone, and during the honey flow the supplying of four or five supers furnishes none too much space for nectar storage and the ripening of honey.

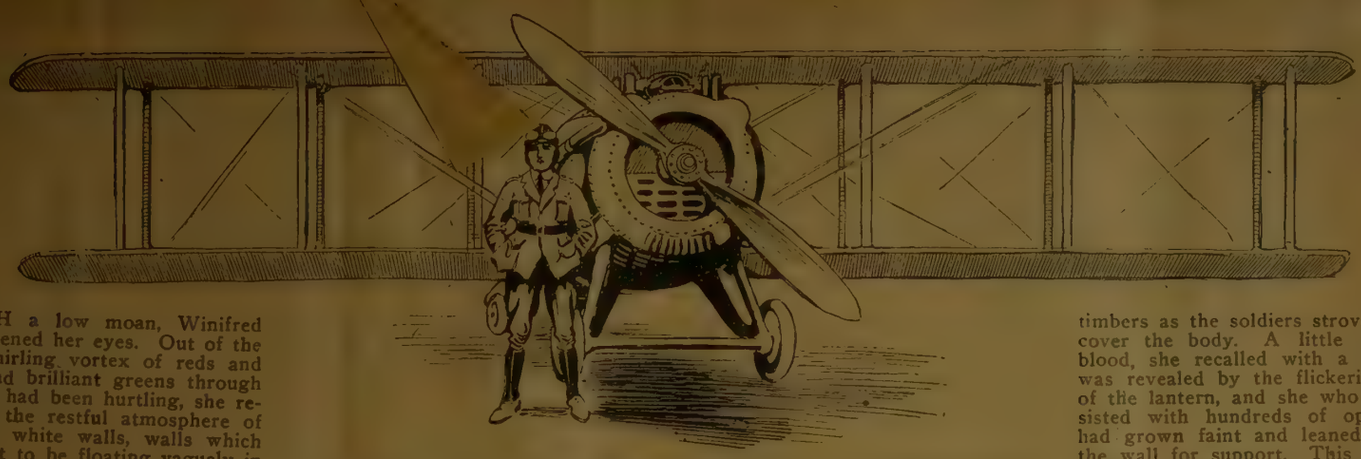
As rapidly as the bees begin working readily in one super, another should be added below the first. In the same way a third super may be supplied. As a rule the super nearest completion is farthest from the brood nest, and the one in which the least has been stored is nearest the brood nest. Toward the end of the flow, increase in storage space is not desirable, and the bees are left to fill entirely what supers they have and to ripen the honey completely. If too much space has been supplied, some of the supers may be removed. The close of the flow marks the beginning of another period of preparation, and if winter is at hand the cycle of the year is complete.

Ladybird Crop Light

State Commissioner of Horticulture G. H. Hecks states that the Insectary Division of his office, for the first time in its history, has been unable to collect an abundant supply of ladybirds in the mountains for distribution to the farmers of the State. For some unknown reason the ladybirds have not congregated in their hibernating quarters as usual and consequently only one-third of the usual number was secured. These beneficial insects, natural enemies of the aphids, are used for the control of the pests which menace various crops. Large numbers have been introduced into Imperial Valley melon fields.

Where Do We Go From Here?

A Short Story by
Albert Constant Jameson



WITH a low moan, Winifred opened her eyes. Out of the whirling vortex of reds and yellows and brilliant greens through which she had been hurtling, she returned to the restful atmosphere of four plain white walls, walls which seemed yet to be floating vaguely in the distance and to connect with each other at strange angles.

"Go away; go away," she repeated again and again. "Don't torment me; oh, how you hurt; go away, please go away!"

A nurse, bending with drawn face over the high, white cot, placed a soothing hand upon her forehead. "There, there, honey," she crooned. "Never mind; never mind. What is it that's troubling you? Go to sleep, now. You must rest."

But the patient moved restlessly. "It's the little imps," she groaned. "They torment me so. If they would only stop jabbing me—sharp, jagged spears—oh, my shoulder; and they hurt my neck so. Oh, go away. Please take them away." And she raised her delicately tapered hand from the white sheet and dropped it again, turning her pretty head in its lace cap restlessly from side to side.

A thin, worn, bearded little man in uniform slipped into the room on noiseless heels, glanced hastily at the bandaged face, felt the fluttering pulse, whispered a few terse directions to the nurse and, before she had time to notice more than the dark circles under his glazed eyes and the tired droop of his shoulders, as noiselessly disappeared.

"Poor man," sighed the nurse to herself. "Hours and days and weeks of it. Plucky boys and shattered bodies. No sleep, no rest, no relief. I wonder when he will break."

She glanced at her patient. The restless head had ceased to move and the fluttering eyelids drooped. The nurse watched her for a moment, then sank wearily into a chair by the window.

Anyone who had known Florence Tilden in the seemingly far-off days before there had been bombing Zeppelins, "seventy-fives" and doughboys, would scarcely have recognized her now. Six weeks of field hospital life had left an indelible mark upon her serious face. And some of her friends had observed her with the same concern that she had just displayed about the tired doctor, wondering "when she would break."

Miss Tilden had received her "baptism" no less than the brave men from her own land whose sufferings she had shared. Demands upon her—upon the entire staff, in fact, had been at times almost unendurable. Perhaps it was the thought that each was carrying as great a load that kept them all up and doing. At any rate, they managed, in some manner, to accomplish the tremendous tasks which fell to them.

But now, as a final drive upon her nerves and composure, they had given Miss Tilden, as a patient, Winifred Lee—Winifred, whose uniform had matched her own, whose charming manner and pretty, childish face had turned the heads of privates and colonels, and whose rather selfish friendship had been graciously esteemed by the older girl. And until now Winifred's heart had held a secret which not even she—usually selected for the bestowal of confidences—had been permitted to share. Revealed through the babbling of the delirious girl, it had brought a sudden, fierce light to the eyes of the watching nurse.

For a long time she stood, frowning, and scarcely aware of the beautiful picture framed by the window through which she gazed so intently. Reflected by the verdured hills of France, the westering sun seemed to take on an almost holy glory. Instinctively she drew out of the light which streamed through the small panes and moved into the interior of the room. Perhaps it was because she was ashamed of the slight curve which she had allowed for the moment to disfigure her lips. Perhaps it was in response to a stir on the part of her patient. At any rate, her face softened instantly as she reached the bedside, and her eyes filled with tears as those of the injured girl turned full upon her from the depth of the gauze bandages.

"What happened? Where am I? I feel so weak——" began the injured girl in a strange, thin voice. Then sudden recognition came, and she stretched out her hand to her nurse. "Florence, is it you? What is it all about? What's the matter?"

Miss Tilden, forgetting her professional mask, looked with pitying eyes upon the shrouded figure and impulsively took the bloodless hand of her patient in her own. "You were hurt, dear. It was while you were off duty last evening. Don't you remember? They had been bombarding us, you know. Suddenly a big shell crashed through the rear veranda, where you were sitting. There was a terrible roar. Some of the poor lads were hurt. One boy was killed by the falling bricks. He would have gone before morning, anyway, poor fellow, but it was terrible! We did not know when more shells would come. We all worked like beavers to transfer the patients and fix up those injured by the explosion. At first you were given up for——"

The patient interrupted her, slow reason gradually piecing together the mixed impressions which were flooding back into her benumbed brain.

"Off duty," she repeated. "I was off duty—evening—last evening—veranda——" Suddenly it seemed as though her hysteria had returned. She gave a stifled scream and, in spite of her weakness, crushed the hand of the nurse until she winced. "Jack—where is Jack? He was with me. Was he killed? Tell me quick?"

Agony, but not the agony of pain, convulsed the injured girl's face as the nurse turned her head away and did not answer. Almost raising herself in the bed, she clutched with both hands the arm of her companion. "Tell me. Did—the explosion—kill—Ja—Lieutenant Freeman. Did—it—kill——"

With supreme self-control, the nurse composed her tired nerves and with a sudden return to professional coolness, gently released the clutching hands of her patient and pushed her back upon the pillow. "You must not talk any more, dear," she commanded. "You are getting feverish. Tomorrow, when you have more strength, I will tell you more. Lieutenant Freeman wasn't killed by the explosion, honey. He wasn't even scratched—a marvelous escape!"

Fierce doubt, then a questioning look, then satisfaction crossed the patient's face in quick succession, as she gazed searchingly into the nurse's eyes. "You are not just trying to make me feel better, are you? No, forgive me. I know you are telling the truth. It is all right now. I am sleepy—again. A little—water—please. You are good to me. I wish——"

Like a child, tired from play, she dropped asleep in the middle of her sentence. Miss Tilden wrote a few words upon her chart and, gently drawing down the blind to exclude the rays of the setting sun, drew a coat over herself and lay upon a cot in the corner of the room.

CHAPTER II

But the tired nurse did not sleep. Impressions as vivid and rapidly changing as those of her patient, if less confused, crowded into her mind. Always, now, when she tried to sleep she felt that sudden, heavy explosion and heard the screams of the injured. And the memory was so sharp that she winced. She had been on duty that fateful evening in another ward on the floor above, and had stood by her patients until ordered to run below and assist with the injured. Sweating, grimy, disheveled men, she recalled, were frantically throwing aside bricks and other debris in an effort to reach those believed to have been caught by the falling walls. Quickly organized stretcher parties were rushing several cases to the operating room at the front of the building. She had turned to assist with the stretchers, when a husky voice called from the semi-darkness where the men were burrowing into the bricks and plaster.

"Miss Tilden, come here, quick! Can you get me a lantern or something? Miss Lee was caught in here. We must reach her body. My God, this is terrible. Quick, the light!"

She had recognized the voice as that of Lieutenant Freeman. Dazed, but blindly obedient, she had run around to a side door and procured a smoky lantern used for entering the cellar. When she returned, the frantic workers had uncovered a pile of broken timbers, and under these could be seen the arm and a glimpse of the uniform of an army nurse. With blanched face, she had herself pushed and strained upon the heavy timbers as the soldiers strove to uncover the body. A little pool of blood, she recalled with a shudder, was revealed by the flickering light of the lantern, and she who had assisted with hundreds of operations had grown faint and leaned against the wall for support. This was her friend—a fellow nurse; it was so terrible. But she had not long remained inactive. Driven by the hope that a spark of life might yet remain in that mangled body, she had added her small efforts to the almost superhuman work of the soldiers in clearing away the wreckage. It had seemed to her ages before the young lieutenant, unaided, finally moved the last great timber which pinned down the unfortunate girl, and with a horrified cry lifted her in his arms and ran with her to the front of the building.

She had followed and with aching heart had watched the doctor bandage the terrible cuts and bruises which marked the head, shoulders and back of the injured girl. And through it all, the young lieutenant had stood stiffly, scarcely moving his glazed eyes from the skillful hands of the surgeon. She now recalled how drawn and white he had looked; how she had longed to take his hand and smooth the tense lines from his boyish forehead. And then another nurse had quietly approached, touched his arm, and beckoned him to follow her. "An orderly," she had heard the nurse whisper. "He says you are called for duty——"

And that was the last she had seen of Lieutenant Freeman. She assumed that he had been ordered into the air to help locate the enemy batteries which had found the range, and which had not only dropped an occasional shell near the hospital, but had also menaced the precious hangars where he had for the past two months made his headquarters.

It did not seem strange to her that no further word had come from him. Even though he returned safely, she thought, he might have been unable to locate them. An order for evacuation of the bombarded area had soon brought a long ambulance train to take the patients to several different hospitals further back of the lines. With two other nurses, a score of badly hurt marines and the unconscious Winifred, she had found herself quickly transported to the big base hospital more than twenty miles away, where she now watched over her injured comrade. Almost exhausted, she had been relieved of other duty and told to stay with the girl and get what rest she could.

But as she lay on her cot in the quiet room it seemed as though she could not rest. Too weary to sleep, she turned uneasily and finally rose to give Winifred some medicine. The girl was murmuring in her sleep. The nurse bent over to catch the words. "Jack, dear, I need you. Come—to me—Jack." Suddenly Miss Tilden replaced the bottle on the stand beside the cot and, evidently having changed her mind about administering the medicine, softly left the room and walked quickly to the outside door at the end of the hall. Upon the little upper porch she stood

(Continued on Next Page)

Where Do We Go From Here?

for some time, grateful for the caress of the cool night wind upon her burning cheeks.

CHAPTER III

It was a hazy, dreamy, monotonous September day when, two weeks later, Winifred, propped with pillows, sat up in her cot for the first time since becoming a patient at the big hospital and displayed some interest in the simple viands Florence had just brought to her on a tray.

For days she had suffered excruciating pain and her face, or rather that part of it which was not covered by the bandages, still looked pitifully drawn and white.

Worry, too, was apparent in the lines about her dark eyes. Each day she had awakened with a new hope in her heart and each night had faced another period of black despair and loneliness. For the passing days had brought no visit from the young lieutenant who had rescued her, and no word of his whereabouts. At first her feeling was only one of disappointment; then had come dread for his safety. And at length, when still no message came, there crept in, in spite of her, a little tinge of doubt.

Had he, after all, not cared as much as she had imagined? She remembered how, before the short period in which she had known him, he had been attentive to others of the nurses in her detachment; how, in fact, he had joked them all about a little French maiden whom he had met, through French officers, at Bordeaux. And she even recalled the apparent frank friendship and understanding that he had exhibited with the plain but sincere, jolly and likable Florence.

Thoughts about her friend, however, were suddenly interrupted by the entrance of Florence herself, coming to remove the tray.

"Can't you come and sit with me a while, Florence?" asked Winifred, wistfully. "I haven't seen much of you lately."

"They are keeping me very busy now, you know, dear," responded the nurse, busying herself with the window shade. "Now that you are better, I have to do regular duty in the big ward, but I shall try to be with you all I can. Is there anything else you want, girlie?"

She went over to the cot to smooth the sheets, and finding Winifred looking at her intently, met her eyes and gazed into them kindly but steadily. It was the eyes of the patient that finally fell.

"Good night, Florence," she said. "I am quite comfortable. There is nothing more except—" and Florence, who had started toward the door, turned back.

"I was just going to ask you whether any message—whether any word had been received from—about Lieutenant Freeman. He saved my life. I wish I could thank him. I wonder if—Florence, do you think he could have had an accident?"

The nurse sat down upon the edge of the cot and, taking the hand of her friend and patient, said gently: "We never know in these awful days when or where we shall meet or separate. We never know when friends will come and go. You must not worry. It is so easy to lose track of one's friends over here.

"Just put your thoughts upon getting well, because worrying would not help you any, and some incident may suddenly place him among us just as it took him away. I must hurry now. Remember, be quiet, don't worry; go to sleep." And with a reassuring pat, she slipped noiselessly away.

But when she reached the hall, and had closed the door softly behind her she brushed from her eyes a rush of hot tears; and had there been an observer he would have wondered at the sudden droop of her shoulders and the lassitude of her dragging steps.

CHAPTER IV

With more sunshine in her heart than she had felt for days, Winifred awoke the next morning with a consciousness of returning strength. Unaided she raised herself in bed and partook with relish of a more elaborate breakfast than she had yet cared to eat. The doctor would soon be in to dress her wounds, and with feminine instinct she tucked the stray locks of hair under her cap and reached for a little pocket mirror which lay on the stand near her cot. But as she raised it to look at her face a cold fear surged through her and the hand which held the glass trembled. They had told her that her neck and face were badly cut and that perhaps she would be slightly scarred. Now that she began to think about it, she recalled how the doctor and the nurse had brushed aside the subject whenever she brought it up. For the first time, she observed the bandages closely and saw how far up on her cheek the surgical dressing extended. An agony of dread clutched her heart, for her nurse's instinct told her that her injuries were more serious than they had allowed her to believe. She started to push the bandage aside to see if she could determine the nature of the cuts, when suddenly the doctor entered.

"Ah-ha! That's the time I caught you primping," he smiled, as she dropped the little mirror. I guess my patient is better, eh?" But his face grew serious as he observed her agitation.

"Doctor" she asked in a tragic voice, but with characteristic directness, "the cut—will it leave a bad scar?"

"Now see here," commenced the physician, "what are you doing, worrying about yourself? I thought we told you to—"

"Doctor, I must know. Will I be badly scarred? I am strong today I want to know the truth. It is very necessary that I know."

He pulled nervously at his beard and paced back and forth for a moment. Then he sat down beside her. "I will not try to deceive you, Miss Lee. Your face and neck will be badly disfigured—and, now be brave, little girl—I will tell you the situation frankly—you will be scarred for life. There is no help for it. I'm sorry I have to tell you this. You must try——"

But he saw that he had said enough. She was no longer listening to him. She did not scream, nor cry, nor talk. With unseeing eyes she stared into space, and with utter dejection lay back upon her pillow. He glanced at her face and, hastily wiping his glasses, withdrew from the room.

Returning after an hour with Florence, he found her still lying as he had left her, seemingly dazed and broken. She did not even wince when they changed the bandages. Seeing that she did not care to talk, the doctor merely hurried through his professional duties and, squeezing her hand for a moment, left her. Florence, too, started to leave, but Winifred called her back.

"Florence, sit down," she commanded imperiously. "I must tell you something." Desperate resolve had apparently dispelled her discouraged apathy. "The doctor told me the truth about my wounds. I might have guessed it, but I have been too weak to think much about my face. It wasn't much, but it was about the only fortune I had." Scarcely noticing her friend's expostulation, she continued almost breathlessly. "I want to ask a favor of you, Florence. Before long I shall be able to leave here. I shall ask for my discharge and return home on the first boat. I do not want Lieutenant Freeman ever to see me. He must not know. He must think I am dead. You will be the only one who knows where I have gone. He may not be alive himself, but if you ever see him, you must tell him you do not know anything about me. Tell him I was taken away to another hospital and that I probably never recovered from my injuries. The chances are he will not find anyone else who remembers who or where I was, and he will not be able to conduct a further search. Do you promise, Florence? Please do this for me!"

The older girl, moved to quick pity, faced her patient with brimming eyes and started to protest. But the pleading manner and tense little face were too much for her. Gently, very gently, she stooped and kissed her patient full upon the mouth, and whispered in her ear: "Poor little girl. I will promise to do as you say—if he ever comes back."

CHAPTER V

Her eyes bright after a refreshing sleep, Florence was crossing the park in front of the hospital one evening a week after this conversation with Winifred. Her step was light and she hummed a little soldier song. Just drawing away from the entrance and turning into the road was a big military car, loaded with departing convalescents. In weak but very enthusiastic voices they were singing, with a very close approach toward harmony, "Where Do We Go From Here?" Puffing happily at their cigarettes as the car rolled away, they waved a friendly good bye to her.

The lights were dimmed in the great ward where she was stationed, and as she swiftly moved down the long row of cots she found some of the men awake and some soundly sleeping. Moving noiselessly about, she gave water to one, medicine to another, a pat of encouragement to another—until finally she paused beside the last cot, which stood alone in an alcove at the far corner of the room.

Caressingly, with a strange tenderness in her eyes, she touched lightly the head of its occupant. "Asleep, Lad?" she asked in a gentle, hushed voice.

A wonderfully fine, boyish face was turned toward her in the half light, and her breath came a little more rapidly as the man upon the cot groped for her hand. Quickly she laid it in his, and with her free hand smoothed the bandage which was bound tightly over his eyes. "I thought you would never come tonight, Flo," he whispered. "I—I could not sleep. I—I feel kind of knocked out. You see——"

"There, there," she answered, running her fingers through his wavy hair. I know it's hard, Boy. But it won't be long now until you can have the bandage off in a darkened room, and when you can see, life will seem brighter again. Just think how it will seem after all has been dark so long. Won't it be wonderful?"

She winced as he suddenly crushed her hand in his. "Flo, don't," he whispered hoarsely. "I can hardly stand it."

"Why, what is it, dear. You haven't lost your nerve?"

"Flo, I don't know what to do. Listen, girl. Today the doctor examined my eyes again. And—I haven't said anything to you before, but he has not been very hopeful any of the time—and today he told me—God, Flo—he told me I would never see again!"

And from beneath the bandages that bound his sightless eyes tears rolls unchecked, not tears of self-pity, for he had been brave beyond compare through it all, but tears of utter discouragement and nervous reaction. But, having told her, he felt better. Her face had blanched at his words. Impulsively she had put her arms around his neck and laid her cheek against his. Now she found herself whispering to him incoherent words of encouragement. "It will not matter, Boy. Don't, dear. Your friends will not let you suffer. Your folks at home will help you to do something. Your life can yet be full and useful. As soon as you are strong enough to leave, you will find the courage to face your great problem. And remember, remember, I am always ready to help you, always your true—friend. And always I shall believe in you."

"I know, Flo, dear girl. Many times I have thanked God that they brought me here where you were—the only soul that I knew. You have always been a true friend, Flo. I can never in all my life repay you for what you have done for me." And he stroked her head awkwardly.

With an odd, drawn look, she drew away. Her voice was strangely stilled, but she gave his hand a parting squeeze of encouragement. "Be brave, Boy. I know you will. I shall return as soon as I can, but you must try to go to sleep now. Good-night." And she slipped suddenly away.

CHAPTER VI

Absently Miss Tilden placed her thermometer in the mouth of a restless doughboy at the farther side of the room. Absently she read the temperature and wrote upon the chart. Still with wandering thoughts she went from cot to cot, ministering mechanically to the wants of those who needed her. Then she slipped down the hall and softly opened the door of Winifred's room.

"Why, child," she cried. "What are you doing?" Winifred was sitting beside the window, her chin supported in her hands and her elbows resting upon the high sill.

"I couldn't sleep, and came over here by the window. The moonlight is so pretty."

"But, child, you will catch your death of cold. You are still weak. You must get into bed."

"Oh, I have been walking around the room and hall for the last three days, you know. Where have you been keeping yourself? I thought you had deserted me entirely? Did you know I was going to leave in the morning?"

"Going to leave? So soon? But are you strong enough?"

"Yes, I must get away as soon as I can. The doctor has arranged for me to go to the station in one of the big cars with some of the boys who are going south. I will take the same train."

"It will seem strange and lonely after you have gone," said Florence in her frank manner. "But I am glad you have at last become strong enough to travel. As soon as you get out you will gain rapidly. I know I have neglected you, girlie, but the doctor said you were so much better

(Continued on Page 22)

A Little Talk About Tractors

"The Man Who Wants to Know" asks a few questions of "The Man Who Ought to Know," and gathers some tractor information of interest to ranchers.

By Albert J. Mason

HE HAS been on the inside looking out, in his relation to the tractor industry, ever since it was an infant, therefore I cornered him one day and demanded some inside information. By way of a lead, I made a tentative suggestion: "I suppose the next great development in the tractor business will be standardization of design."

"No," he retorted, so suddenly that I almost dropped my cigar holder (I had been fingering it suggestively since observing the row of panatelas in his vest pocket). "Why should tractors be standardized?" he asked. "How can they be standardized?"

"Search me," I replied. "Why should they? How can they?" And here is his reply:

"You naturally try to link the future of the tractor business with what has happened in automobile circles. And that is natural, for the tremendous volume and low prices which have characterized the development of the motor car industry are traceable, in part at least, to the use of standardized design, parts and equipment. Can the tractor industry be placed on the same basis?

Peculiar California Conditions

Which manufacturers have had to meet. Above is shown a typical orchard cultivating outfit, capable of making short turns and running under low limbs. Below is a vineyard scene, showing the use of special machinery designed for working the soil between the rows.

Automobiles No Comparison

"While some of the authorities closely in touch with the tractor business assert that it is possible to standardize tractor design, the majority of the engineers have given up the idea and have conceded the necessity of following different lines of development."

Continuing, he pointed out that complete standardization in tractor manufacturing—that is, the adoption of one general type and the use by various manufacturers of similar parts and equipment—seems a very remote possibility to most members of the tractor fraternity.

The motor car, they declare, although made in a number of types and styles, is designed for one purpose—that of traveling over the road. The tractor, on the other hand, must meet many varying conditions. There can be, in fact, engineers believe, no true all-purpose tractor. The big wheat rancher cannot economically use a machine suited for the small orchardist, while the little orchard machine would not make much headway in the great grain fields. The hillside farmer may find a wheel-type impracticable for his work; still another grower may encounter conditions which point to the superiority of "wheeler" over "crawler" for his particular purposes.

Industry Not Centralized

"Another factor which tends to prevent standardization," the expert continued, "is the fact that tractor manufacturers are widely scattered. The motor car industry is practically centralized, but tractors are being manufactured in a great many States. California, for instance, has become a great tractor center, and it is difficult to imagine the adoption of standardization by our manufacturers. For here, as perhaps in no other section of the country, have been developed special types suited for the peculiar requirements of our different growers.

"Offering as it does a broader range in types of farms than almost any other State, from the intensive vineyard or orchard to the vast open ranches, California has been a fertile field for tractor designers, both local and eastern. This has resulted also in the development of much special equipment to use with the tractors, such as vineyard cultivators, bean-cutters, orchard implements and hitches and deep-tillage tools."

"What bearing has all this on the business of the Pacific Coast food-producer?" I asked. "Simply this," was his prompt reply. "The prospective tractor buyer should not wait for the development of the standardized tractor, for it will probably never materialize. Since a number of successful types are on the market, he should personally, by investigation among dealers and users, determine upon the outfit best suited to his special requirements, and buy that outfit as soon as he is able. To farm without a tractor is merely to postpone the adoption of methods insuring greater efficiency and larger production; to buy a tractor without investigation

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The "Jewels" of the Tractor

How to adjust and care for the tapered bearings used extensively in wheels and other moving parts of tractors.

By Arthur Cummings
Of the Timkin Roller Bearing Company

(Written Especially for Orchard and Farm)

TAPER TRACTOR BEARING ASSEMBLY

CLEANING BEARINGS WITH GASOLINE

APPLYING GREASE BEFORE REPLACING

(Illustrations courtesy Bearings Service Co. and Ruddle & Mennillo.)

THE farm tractor fills a peculiar position in the automotive field. The passenger car is built for speed and grace; the truck for carrying capacity, but the tractor is the embodiment of pure brute strength; therefore, it must be planned in every detail with this attribute in view.

One of the first things, therefore, that occurs to the engineer who is laying out his plans for a tractor is the selection of the proper bearing for each moving part of his machine.

In some cases he will deem plain bearings sufficient. (Plain bearings are merely cylinders, of some metal different in composition from the shaft or moving part, inside of which the shaft will turn more easily when aided by lubrication.)

Frequent lubrication is necessary, however, with plain bearings. It is this fact which makes it necessary for the locomotive engineer to "oil around" frequently as he covers his division. The thin film of oil which separates shaft from bearing and prevents friction is made up of minute globules which break down under continual pressure and must be constantly renewed. The successful use of plain bearings is possible only where constant, almost hourly, attention is paid to lubrication.

Tractor Situation Different

The time of the farmer is too valuable to spend "oiling around" a tractor, especially at the seasons when the tractor is being driven to the limit, as when important plowing is being done and must be completed in the shortest possible time.

The substitute for the plain bearing is the anti-friction bearing. Imagine substitution for the minute globules of oil which roll between the shaft and bearing, of metal balls or rollers, and you will have an idea of the principle of the anti-friction bearing.

The burden the bearing has to carry is made up of two factors—end thrust and radial load.

What Is Radial Load?

By radial load is meant, for example, the downward pressure, exerted on the wheel bearings by the weight of the tractor. Likewise the pull on the wheel bearings due to the backward drag of the plow, the pull on the belt pulley bearings due to the weight of the belt and the draft of the engine are both radial load.

Radial load in tractors is heavier and more severe than in any other form of automotive vehicle. Gears in tractor transmissions, weigh anywhere from ten to one hundred times as much as those in automobiles and motor trucks. Tractor wheels are also far heavier than those of the other vehicles.

End Thrust Explained

The other load that bearings are called upon to carry in all automotive vehicles is called, technically, end thrust. It is end thrust that slides you along the seat when the automobile goes quickly around a corner. It is the side pressure met with when the tractor works with one wheel in the furrow or on a side hill or rough ground.

End trust is met with, however, in other locations than in the wheel bearings. In fact there are not many bearing points on the tractor where end thrust is not involved to a greater or less degree. The pull of the implement behind the tractor sets up end thrust. There is also end thrust on the worm shaft, on the pinion shaft and on the belt pulley shaft.

Necessity demands that tractor construction must give great strength and, in all mechanical work, increased strength is most easily obtained through greater simplicity of construction. The smaller number of parts required to install the bearings in a tractor make, consequently, a less number of parts to get out of order.

The problem, therefore, resolves itself into selection of the simplest bearing which will function in the way we have pointed out. Years of experience has demonstrated the superiority for tractor construction, of tapered bearings. The tapered bearing will wear, it is true, as any bearing will wear under the severity of tractor service. Bearing wear permits shafts to get out of line, resulting in loss of power, noisy shafts and gears out of mesh, with consequent excess friction and ultimate breakage of teeth. It is important, therefore, that the wear be regularly compensated.

The tapered roller bearing, by the same quality that enables it to take end thrust, may be adjusted to take up all effects of wear. The end thrust merely forces the cone and rollers into the cup with no loss of power or increase of friction. Wear is taken up by the part turn of a nut or the removal of a shim which forces the cone and rollers into the cup, bringing them into the same relationship as when newly installed.

How to Care for Bearings

The anti-friction bearings in your tractor should be examined once a year, or better still, twice a year; say, in the spring after the heavy work of plowing and preparing the ground has been finished and again in the fall after the field work is completed.

Take out the bearings, and with gasoline or kerosene and a brush remove all the grit and dirty grease. An old tooth brush will help on this job. Then when they are dry and clean liberally cover the wearing surfaces with a good grease, packing it also around the rollers and inside the cage of the bearing. In the case of a wheel, put a good supply in the hubs before replacing it on the axle or spindle. Any light grease or heavy oil will serve as a lubricant if it is positively free from acid and acid-forming compounds. Grease cups should be kept well supplied.

A small paddle is best for applying the grease. The greatest care must be exercised, however, to see that there is no grit on the paddle, in the grease or on the bearings themselves.

Adjusting the Bearings

When wheel bearings or gear bearings have been removed, a new adjustment is necessary when they are replaced. The best way to adjust roller bearings in a tractor wheel is to draw up the adjusting nut tight and give the wheel a few turns to see that all the parts are properly seated. Then turn the nut back a quarter or half turn so that the wheel will revolve freely, but will not permit perceptible shaking when grasped by opposite spokes. When the bearings are so adjusted lock them and they will give the best of service.

Gear bearings should be set up to a snug fit but should not be so tight as to prevent the gears from turning freely. Gear bearings should be lubricated with a heavy fluid oil that will flow freely at an average temperature—a non-acid and non-acid forming oil similar to steam cylinder oil.

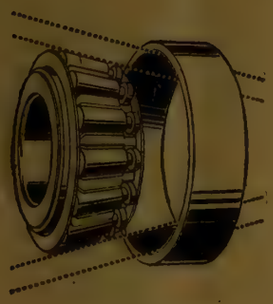
Handled as above described, a set of tapered roller bearings should outwear and outlast the tractor in which they are found.

HOW BEARING WEAR IS TAKEN UP IN OVERHAULING

TESTING WHEEL AFTER REPLACING BEARINGS

READY FOR ANOTHER SEASON'S WORK

TIMKEN TAPER



Dotted lines show how the inside of the "cup" of a Timken Bearing is *tapered* to fit over the *tapered* rollers.

Does It Really Cost More?

Does the added safety and durability that the manufacturer puts into his car when he specifies Timken Tapered Bearings actually mean a bigger outlay on his part for the item of bearings?

Does the protection that he thus secures for other important parts add to manufacturing cost?

Yes, Timken Bearings *do* cost more. For they are not the kind that are built to meet a price.

Like the best known and best built axles, springs, transmissions, electric starters and so on they add far more *value* than they do to *price*.

The foregoing is borne out by the names of the motor car, truck and tractor builders listed in "The Companies Timken Keeps." These builders would not pay more for Timken quality, if they did not know from experience that they thus add value to their product.

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The best string bean from any viewpoint for the home garden.

1. It is absolutely stringless and the best snap bean grown.

2. To thoroughly appreciate the rich, delicious, nutty flavor, allow the beans to nearly mature on the vine or pick when the pods begin to dry and are thoroughly filled out. Then shell and cook as you would peas. Cooked in this way, they are as satisfying as a dish of the sweetest, freshly picked green peas. The flavor, of course, is different, being that of the nut. THEY ARE POSITIVELY SUPERLATIVE.

3. As a shell bean for baking, it is far superior to any other bean. They should be allowed to fully mature and cure on the vine, then shelled as soon as possible.

THREE-IN-ONE is an enormous and continuous cropper, climbing on poles or on the fence and bearing quantities of green podded beans, slightly streaked with purple, which make them very attractive in appearance.

If you find after growing these beans that they are not all I claim for them, I will cheerfully refund your money, postage included.

Through patient and careful seed selection, from year to year, I have built up the most remarkable strain of Limas and Snap Beans ever grown.

Seeds, 35c packet; 3 packets for a dollar.

Not more than three packets sold to any one person.

Each packet of Limas contains 2½ ounces of seed.

Each packet of Three-in-One Pole Beans contains 2 ounces of seed.

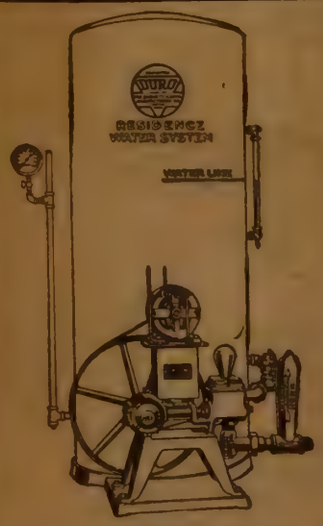
One-half Actual Size of Yancey's Monstrous Bush Lima

ARCH B. YANCEY
6408 Miramonte Boulevard, Los Angeles, Cal.

I am the originator of the California Gold Nugget Sweet Corn, declared by all experts to be the sweetest and most delicious sweet corn ever grown.

No seed of this delicious corn for sale until the Spring of 1920.

Say: "I-saw it in Orchard and Farm"



Let "DURO" Do It

THE all-round water system for household use. Pumps either hard or soft water at a very low cost and furnishes it under pressure to any part of the house just like city water service.

"DURO" Residence Water Systems will supply the home, grounds, water the garden, stock, etc.

Strong, simple, quiet running and entirely automatic in operation.

Send for Duro Booklet

—which shows just how DURO lightens labor and brings city conveniences to country homes. Mailed free on request.

California Hydraulic Engineering & Supply Co.

69 Fremont St., SAN FRANCISCO — 425 E. Third St., LOS ANGELES

We have some good territory for live dealers.

NITRATE OF SODA

It puts back into the soil what the trees take out — Nitrogen. Helps young trees to grow thrifty and strong; keeps old trees from losing their productiveness.

CHEAPEST AND BEST

Cheapest because it supplies most available Nitrogen at the least cost. Best because it is taken up by the trees immediately after application and leaves no injurious residue.

Clean, odorless and easy to handle. Direct from Chili in original bags.

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NITRATE AGENCIES CO.

HENRY BOOKSIN, Dist. Mgr.
518-519-520 Bank of San Jose Bldg.
SAN JOSE, CALIF.

BEFORE YOU BUILD

GET OUR ESTIMATE

Largest Stock to Select From

20 Flats.
60 Government Buildings.
At Berkeley.

Latest designs in plumbing; 3,000,000 feet dimension lumber, like new; ranch accessories; anything in building material; 40 per cent saving.

SPECIAL OFFER

200 Bronzed Electric Fixtures, 5-light, with Globes, $7.50 each.

EVERY SHIPMENT GUARANTEED.

Symon Bros., Wreckers

Main Office:
1501-1527 Market St., San Francisco.

Riding a Hobby to Health and Success

PLUCK has made more good farmers than luck. And pluck is always admired. Orchard and Farm readers will, therefore find interest as well as inspiration in the story of Arch B. Yancey of Los Angeles, a young man who traveled from newspaper work to agriculture on a crippled foot.

The fact that his agricultural work has been confined until this year to the cultivation of city lots detracts not the least from the story, for laboring under the most painful difficulties, he has established himself as a successful plant breeder and producer of new varieties, as well as having gained a wide reputation as pastmaster of the art of gardening. Not content with the ordinary varieties of vegetables, he has devoted his time to improvement and experimentation. As a result, he is now enjoying the fruit of his hard work and gritty determination, through the great demand for his seeds and plants which has followed the recognition of his achievements.

Mr. Yancey was formerly a New York newspaper man. While in California four years ago he suffered a very painful accident in an automobile wreck, with the result that he underwent several operations and spent practically two years flat on his back. Able to be about on crutches, but still facing another operation, he continues with intense interest the work which he had followed as a hobby prior to his injury, and which he supplemented by study during the long months when he was confined to his bed.

Unable to work in an upright position, this indomitable gardening enthusiast uses a gunny sack filled with pillows, on which he sits while planting and cultivating his miniature fields, propelling himself from bed to bed or from row to row by moving his cushion along the ground, and resting his injured leg before him. By using short-handled tools, he points out, he is able to accomplish as much work in this position as the ordinary gardener does with the aid of all his faculties.

He and his 11-year-old son, James, last year planted and cared for eleven city lots, with no help other than the original plowing and harrowing of the ground. On these lots they raised large quantities of corn, beans and other standard vegetables, which, in addition to supplying the family table abundantly, brought in a nice income from market sales.

Think that over, oh, ye henpecked husbands, who "kick" when wife asks you to weed the onions!

One of the most interesting of these improved vegetables is a new sweet corn, consisting of a blend of three varieties, which has been pronounced by experts the finest table corn ever produced. The result of nearly ten years' work, a small quantity of the seed corn will be ready to place in the hands of growers by next year, according to its "inventor," who is carefully preserving the small quantity he has produced to plant on a larger area this summer. He is a great believer in late planting, especially of corn and beans.

Extending his operations, he is this year conducting a number of partnership and personal farming enterprises on leased acreages near the city of Los Angeles, at the same time making good use of the many city lots which annually respond to the magic of his methods by producing tremendous yields of superior vegetables.

Credited with being the first person to bring Roselle seed to California from Florida, where this interesting vegetable is widely grown, Mr. Yancey has become greatly interested in its possibilities for California. The Roselle, as most gardeners know, will, when grown from a plant, produce the same year large quantities of the "bolls" from which delicious Roselle jelly is made, and at the same time furnish a large bush suitable for ornamental use.

He has also experimented with the many freak varieties of tomatoes, and calls attention to the interesting possibilities involved in combining them in salads, where the various shades of color, from the yellow to the brilliant red, make a pleasing effect.

Another vegetable, regarded by Mr. Yancey as one involving big possibilities, is the giant green pepper, of the type grown by a few Italian growers, and unknown on local markets until introduced by them after experiments with seed brought from their native land.

Who can say what limit there may be to the success that this young man will attain? There are thousands of "down and outers" who gave up under much less of a handicap than he has carried. Thousands of funerals have been conducted in honor of men who have undergone less physical torture than he.

Unwilling to make capital of his disability, and confident that here in sunny California he will eventually regain entirely his health, he is making big plans and carrying out his projects on an equal plane and in competition with men who are strong and well. If pressed for an explanation of how he was able to throw off despair and the burden he has carried, he responds by introducing the inquirer to his wife and four fine, healthy, happy children. "They have shown me the way," is all that he says.

New Bulletins

The Dean says: "A reference library is an essential part of the equipment of the successful business farmer, and every farm library should include the free Government and State bulletins. Filed and indexed for convenient use, they may often be the means of saving time and money."

AMONG the late publications of the United States Department of Agriculture are a number which are of interest to California farmers. Address the Division of Publications, U. S. D. A., Washington, D. C. These publications will be sent free to anyone who applies.

	Farmers' Bulletin
Operating a Co-operative Motor Truck Route	1032
The Farm Tractor in the Dakotas	1035
Muscadine Grape Paste	1038
Illustrated Poultry Primer	1043
Conserving Corn From Weevils	1029
Growing Sugar Cane for Syrup	1034
Hay Stackers for Saving Labor	1009
The City Home Garden (A Garden Manual)	1044
Date Growing	1016
Sweet Potato Growing	999
Raising Mallard Ducks	720
A Simple Steam Sterilizer for Dairy Utensils	748
Home Canning by the One-Period Cold Pack Method	839
Growing Fruit for Home Use	1001

Among the recent publications of the University of California are the following, copies of which may be obtained free of charge by addressing the Director, Agricultural Experiment Station, Berkeley, Cal.:

	Circular No.
Handbook of Plant Disease and Pest Control	204
Influence of Barley on the Milk Secretion of Cows	305
The Function of the Farm Bureau	209
Saving Raisins by Sulphuring	211

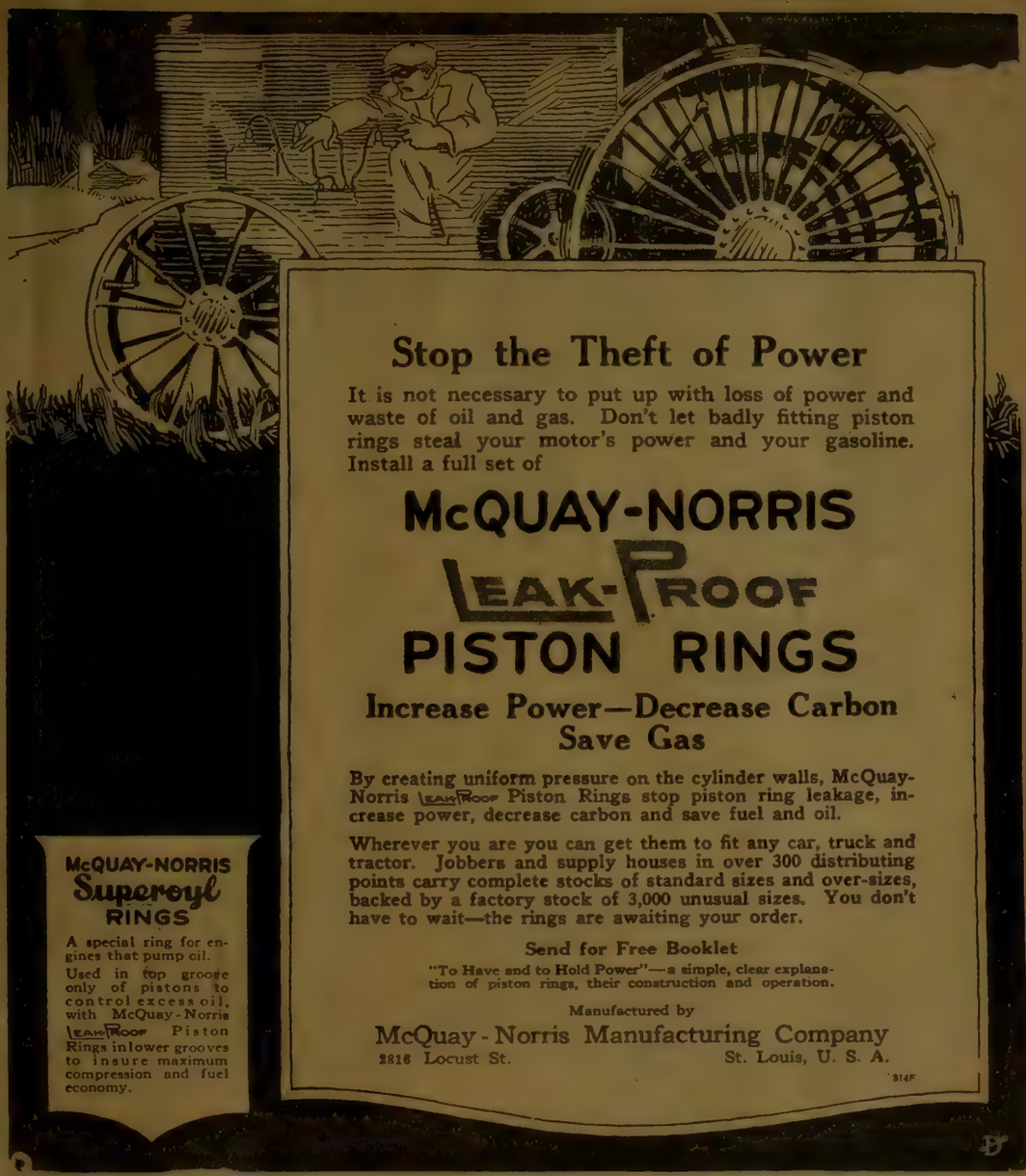
The first circular listed (No. 204) is a valuable text-book, in which the fruits, vegetables and principal farm crops of California are listed in alphabetical order, with the most approved methods of fighting their insect enemies indicated in each case. It is designed to help the home gardener no less than the farmer or fruit grower.

Explosive Regulations Revoked

All regulations relating to the purchase, possession and use of explosives for reclaiming of land, stump blasting, ditching and other agricultural purposes are revoked and no further license will be required, according to recent announcement of the Bureau of Mines, Department of the Interior, Washington. Owing to the necessity of protecting citizens and property from the machinations of enemy agents, the sale of explosives even to farmers has, since the declaration of war, been conducted under a strict license system. The ban is now removed, subject to the regulations of the regular statutes.

The bean production in California in 1918 was almost double that of the next largest producing State, Michigan, and over five times as large as the third largest State, New York.

A man is known by the deeds he does
And not by the thoughts he thinks.
Perhaps 'tis well, but the thoughts will tell
Whether he swims—or sinks.



Stop the Theft of Power

It is not necessary to put up with loss of power and waste of oil and gas. Don't let badly fitting piston rings steal your motor's power and your gasoline. Install a full set of

McQUAY-NORRIS LEAK-PROOF PISTON RINGS

Increase Power—Decrease Carbon Save Gas

By creating uniform pressure on the cylinder walls, McQuay-Norris Leak-Proof Piston Rings stop piston ring leakage, increase power, decrease carbon and save fuel and oil.

Wherever you are you can get them to fit any car, truck and tractor. Jobbers and supply houses in over 300 distributing points carry complete stocks of standard sizes and over-sizes, backed by a factory stock of 3,000 unusual sizes. You don't have to wait—the rings are awaiting your order.

Send for Free Booklet

"To Have and to Hold Power"—a simple, clear explanation of piston rings, their construction and operation.

Manufactured by

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McQUAY-NORRIS Superoyl RINGS

A special ring for engines that pump oil.

Used in top groove only of pistons to control excess oil, with McQuay-Norris Leak-Proof Piston Rings in lower grooves to insure maximum compression and fuel economy.

Cann's Ant Exterminator

A Non-Poisonous Liquid Spray That Never Fails

Priced at

25c and 35c

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Sold by all leading grocery and drug stores.

Hardy W. Campbell's valuable book, "Progressive Agriculture," is being offered for sale, including three years' subscription to Orchard and Farm, for $1.25. Mail your order today.

PLANT THIS HOME APPLE ORCHARD

and in just a short time—a very few years—you'll have **apples by the barrel from your own Home Orchard.** And the trees will add to the value of your home. You can plant them in your yard, or in a row along the fence or road, or in the chicken run, where the growing trees will provide shade for the flock. Accept our offer and **order your trees NOW**

We'll Send Twelve Grafted Apple Trees, Postpaid

Each little tree is produced by grafting together a "scion" branch from a selected tree of heavy-cropping record, to a healthy one-year root. Each little tree is about a foot high. They take root at once, make rapid growth and bear large crops of choice apples even sooner than larger trees planted at the same time.

Two Each of the Six Most Popular Varieties

TWO GENUINE DELICIOUS—The finest and most beautiful apple grown. Very large, inverted pear shape. Color dark red, shading to golden yellow toward the tip. A fine keeper, sweet and juicy. The tree is strong, hardy, and productive.

TWO YELLOW TRANSPARENT—A very early, and an abundant bearer. Often bears some apples the first year, even in the nursery row. A summer apple. Flavor acid and very good. Skin clear white, turning to pale yellow.

TWO JONATHAN—A general favorite, and always in good demand at fancy prices. Of medium size, roundish; skin nearly covered with dark red. Fine-grained, tender, and of exquisite flavor. Tree slender and spreading.

TWO STAYMAN WINESAP—Deep, rich red in color. It is a marked improvement over the old Winesap, in both quality and appearance. Flavor rich sub-acid. The tree is a thrifty grower and an abundant bearer.

TWO WEALTHY—A native of Minnesota, where it has proved hardy, vigorous and productive. The fruit is of medium size, red, streaked with white. Excellent quality and flavor. One of the most productive apples grown.

TWO WINTER BANANA—A fine, vigorous grower, with large healthy foliage. A very early bearer of large, beautiful apples, golden yellow, with a red flush. The flesh is rich, aromatic, and of the highest quality. A good keeper.

Our 12 Grafted Apple Tree Offer

This wonderful collection of twelve grafted apple trees sent postpaid with each three years' subscription to Orchard and Farm at $1.00. Mail your order today. Address Orchard and Farm, Los Angeles, Calif.

The '49er says=

"the genuine GIANT dates back to 1866"

"I remember well when we used black powder for stump blasting and mining. Just after the Civil War the first Giant Powder ever made in the United States was manufactured in a little laboratory in what is now Golden Gate park.

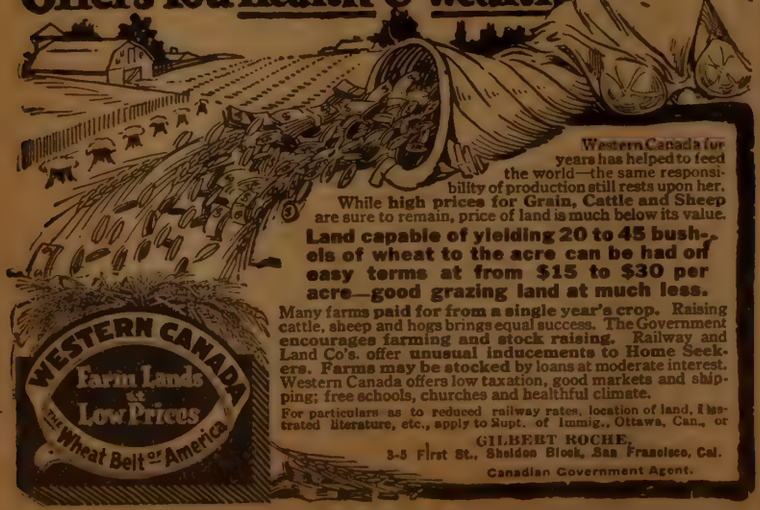
"Out of that beginning has grown The Giant Powder Co., Con., with its chain of great plants and magazine stocks throughout the entire West. And the Giant Farm Powders are being used for stump blasting, boulder blasting, tree planting, etc., by thousands of Western land owners. Giant Powders have always been so popular that some people have thought any ordinary dynamite was Giant Powder, but that is wrong. The only way to get Giant economy and efficiency is to get the genuine Giant Powders made by the originators of the name."

Just tell us "send me your book," and we will mail you our valuable guide to blasting, "Better Farming with Giant Farm Powders."

THE GIANT POWDER CO., CON.
"Everything for Blasting"
215 First National Bank Bldg., San Francisco
Branch Offices: Denver, Portland, Salt Lake City, Seattle, Spokane

STUMPING GIANT FARM POWDERS EUREKA

Western Canada's "Horn of Plenty" Offers You Health & Wealth



Western Canada for years has helped to feed the world—the same responsibility of production still rests upon her.

While high prices for Grain, Cattle and Sheep are sure to remain, price of land is much below its value.

Land capable of yielding 20 to 45 bushels of wheat to the acre can be had on easy terms at from $15 to $30 per acre—good grazing land at much less.

Many farms paid for from a single year's crop. Raising cattle, sheep and hogs brings equal success. The Government encourages farming and stock raising. Railway and Land Co's. offer unusual inducements to Home Seekers. Farms may be stocked by loans at moderate interest. Western Canada offers low taxation, good markets and shipping; free schools, churches and healthful climate.

For particulars as to reduced railway rates, location of land, illustrated literature, etc., apply to Supt. of Immig., Ottawa, Can., or

GILBERT ROCHE,
3-5 First St., Sheldon Block, San Francisco, Cal.
Canadian Government Agent.

WESTERN CANADA Farm Lands & Low Prices The Wheat Belt of America

A Farmer's Percheron Experience

BURNING the candle at both ends is not a good business proposition at all times, but Fred Blower, a Washington grain farmer, is doing it, and making a nice profit. He is a practical man with a long head. That is why he has pure-bred Percheron horses. Mr. Blower calls his horses "dividend payers," and apparently he has good reasons for doing so. When, eight years ago, he wanted some horses to work his 350-acre farm, he thought a little before buying. Finally he hit upon the plan of purchasing pure-breds. His idea, as he puts it, was to work the horses and to realize a nice check ever so often from the sale of colts. And he has carried out his plans.

"In January, 1911," he stated recently, "I purchased a pair of registered black Percheron mares. They weighed 3900 pounds and were in foal to a 2100-pound stallion. The mares cost me $1000 and another $100 for transportation.

"In May the mares foaled, having fine filly colts, and from this start I now have fourteen colts. I had seventeen, but three died. I sold one of the original mares and her first colt for $800, and two yearling stallions for $600. These sales, coupled with the $200 I got for a four months' old filly, brought the total to $1600.

"This is $300 more than the original purchase cost me and I have a bunch of fine colts, in addition to having the horses do the farm work. Two years ago I lost one of the original mares, and last fall a five-year-old mare. Now I have nine young horses on hand, seven old enough to work and two colts. These Percherons, in addition to raising the colts, have done all of the work on my 350-acre farm.

"In our locality, because much of the work is unsuited to tractors, we have to use horses, and I think it is extra good business to have pure breeds. One not only can do farm work, but can realize from the horses as well.

"Five years ago I bought a two-year old stallion and he has developed into a fine sire. At four years he weighed 2100 pounds. I keep him at work, too, and think he does enough work to pay for his keep. This work makes him all the better for service."

Why and How I Raise Hogs

A Tulare subscriber tells how he has solved the labor problem and why he believes that success will crown his present venture.

THIS looks to me like a good "hog year." Although the farm bureau auction sales held during the past few weeks have shown some variation in the market and until recently a decline from the prices obtained during the winter, still it seems to me impossible for hogs to become very cheap this year even if no price guarantee were maintained. And I hold this belief in spite of the fact that production was enormously increased by the "more pork" drive last season.

My reasons for these conclusions are several. In the first place, I believe the live pork reserve of the country is still below normal, because prior to the aforementioned "drive" liquidation took place for months on a scale never before experienced.

In the second place, the Food Administration, in its close study of foreign conditions, has continually emphasized the shortage of fats as the outstanding feature of the world food shortage. Hogs offer the quickest and best means of supplying these fats. An official report issued by the United States Department of Agriculture during March gives the following interesting figures:

Greater Need For Pork

During the 12 months ending June 30, 1917, the exports of pork and pork products from the United States to the Allies, neutrals, Belgian relief, and American Expeditionary Forces amounted to 1,498,312,713 pounds. For the following year they amounted to 1,719,701,176 pounds. The requirements for shipment abroad in 1919 necessarily must be somewhat greater than the amount sent in 1918, according to the U. S. Department of Agriculture, and to meet this demand and to feed the population at home without decreasing this country's ability to maintain a high rate of production is the opportunity and obligation of American swine raisers.

Considering merely the market aspect, hogs "look good to me." But from the breeder's viewpoint, I think the outlook is equally encouraging. The constant hammering of educators, farmers' organizations and the agricultural press on the subject of substituting pure-breds for scrubs, as well as the increasing interest among boys' clubs and farmers in better livestock, will, I feel sure, result in an ever-improving demand for good swine. Many would-be breeders have been "holding off," awaiting the cessation of the war and a lowering of feed prices before investing in foundation stock. They are now either buying or planning to buy.

I have a 20-acre ranch, 10 acres of which is in alfalfa. On most of the balance I shall raise irrigated barley and potatoes this year, planting the

(Continued on Next Page)

California Wonder Corn

The result of ten years' selection. Produces six times as much as common corn. First prize winner at San Francisco Land Show. Quick and big returns from a small investment. All seed produced from corn bearing 5 to 12 ears per stalk. Grows 10 to 16 feet in height, producing enormous crops of very rich ensilage. Choice selected seed for sale at reasonable prices. Our illustrated booklet, giving full history and details of this wonderful money-maker, sent free on request. Your name on a postal is all we require.

E. C. FRAZEE
Corn Specialist.
Santa Rosa, Calif.

Lower Tire Prices

The cost of tires, tubes, etc., is reduced about 25 per cent by co-operative buying. First quality, guaranteed tires are obtained at prices even lower than often charged for "seconds." This Co-operative Service, with prices, etc., can be secured by sending the Membership fee of $1.00 to L. Powell, Mgr., Box 96, Racine, Wis., or full particulars will be sent on request.

The saving on a single purchase may equal ten times the cost of membership, and even the $1.00 is merely held in trust as a guarantee of good faith, to be returned on demand. In sending your application to the above address give make of car.

potatoes after the barley is off, for a second or late summer crop.

Succulent Roots Provided

About two acres is in artichokes, reseeded from a patch that I had last year. I believe I have a good combination for hog-raising. I now have 20 sows with young pigs. They are kept in colony or "A" houses in the alfalfa field, where they have free range. I am experimenting this year with "spotted" pigs secured by using a registered Duroc-Jersey boar on Poland-China sows. I have some grain left over which I am feeding, ground with a little tankage, to the sows. My pigs were late and will be finished on the new barley crop.

I expect to fatten the market pigs with self-feeders used right in the alfalfa field. Will also turn them occasionally into the artichoke patch, letting them harvest the roots themselves. By supplying plenty of water and keeping a mineral mixture constantly before them, I expect to raise these pigs with very little, if any, sickness, as they will get plenty of pasture and exercise, with all the green alfalfa they will eat.

I shall force the pigs after weaning when I commence feeding grain in self-feeders, letting them have all they will eat (except for a few sows, which I shall pick from the cross-breds to retain for use next year). Will not let the sows get as fat as the market hogs, caring for them, later on, in a small, separate lot. As an experiment I shall breed them to a Berkshire boar.

Anticipated Returns

I figure on turning off 50 or 60 fat barrows and probably 30 or 40 sows, disposing of the market hogs at about 8 months of age, when I figure they will weigh about 300 pounds. I believe that by following this system I shall realize a greater profit from my hay and grain, with less operating expense than by any other method I could follow.

I have found that hogs will make good gains on alfalfa pasture alone, without any other feed, but of course it is necessary to supplement grain in order to obtain quick and satisfactory gains. An acre of established alfalfa will easily support from 5 to 10 mixed sows and pigs, according to age, during the fattening period without injury to the roots. There are many hog-raisers who advocate fencing the hogs into small areas at a time, but I believe less damage results to the field if they are given the run of the pasture.

If the colony houses are scattered about the field the sows will at first be inclined to quarrel and to pile up in two or three houses, but by a little "herding" the first week or ten days, they may be induced to scatter out with their litters, and will usually continue to make their headquarters in the house to which they become accustomed. I keep the sows that have farrowed in for several days until the pigs are strong and lively, gradually bringing the sows up on full feed and accustoming them to the alfalfa by cutting a little green hay every day and throwing to them in the pens.

I irrigate the field by constructing a temporary fence line to divide it in half, watering one half while the hogs are in the other.

This entire system makes possible economical use of labor. The grain is well along by the time the sows farrow, and there is little field work to interfere with their care. Then when it is time to harvest the grain and to put in the second crop, the hogs are practically caring for themselves. It is only necessary to see that they have plenty of water and to fill the feeders occasionally. I use rubbing-posts, with oil, for lice. Have had no cholera.—Fred W. Gibbs, Tulare County.

A Social Help

Let's suppose it's a church or school social—or a Red Cross rally—or a "get-together" meeting of the Farm Bureau—or what not—

Will Ghirardelli's be there? What a question! For this delicious, appealing food-beverage is *always* in order at any social function. It means cheer and comfort and warmth! It provides a social help that no hostess (whether she has in mind a "big affair" or a "little party") can afford to overlook.

In ½ lb., 1 lb. and 3 lb. cans—at the store where you do your trading.

Say "Gear-ar-delly"

D. GHIRARDELLI CO.

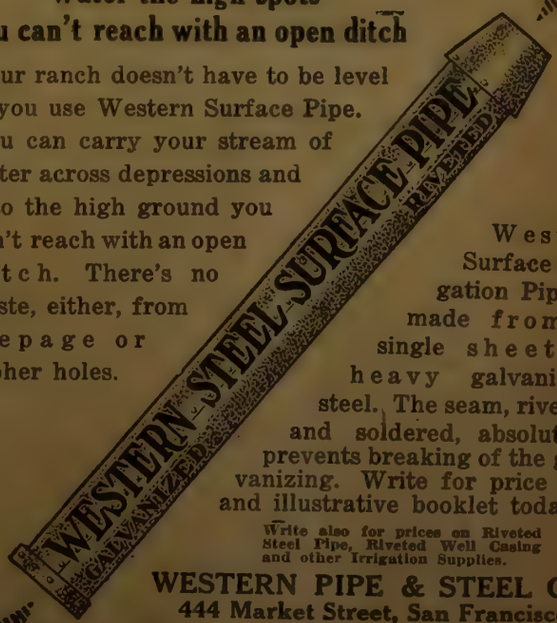
Since 1852 San Francisco

Ghirardelli's Ground Chocolate

Irrigate through this pipe -

Water the high spots
You can't reach with an open ditch

Your ranch doesn't have to be level if you use Western Surface Pipe. You can carry your stream of water across depressions and onto the high ground you can't reach with an open ditch. There's no waste, either, from seepage or gopher holes.



Western Surface Irrigation Pipe is made from a single sheet of heavy galvanized steel. The seam, riveted and soldered, absolutely prevents breaking of the galvanizing. Write for price list and illustrative booklet today.

Write also for prices on Riveted Steel Pipe, Riveted Well Casing and other Irrigation Supplies.

WESTERN PIPE & STEEL CO.
444 Market Street, San Francisco
Fresno Bakersfield Los Angeles

Deliver your water where you want it

MOLINE HAY TOOLS

Put up your big hay crops with Moline Sweep Rakes and Stackers.

They enable you to do your work speedily, handle your hay crops without damage by breaking or shattering, stack it lightly to prevent packing, and top off the stack with a high crown to shed rain.

Moline Hay Tools are light, strong and durable. With them the fewest number of men do the most work and put up hay so that it remains good until used.

The Moline Swinging Hay Stacker offers the most speedy, economical and practical method for stacking big hay crops. Two men and one horse can stack 25 tons a day with it. Builds a stack 25 feet high. Loads from either side and is easily transported from place to place. It is entirely automatic in its action.

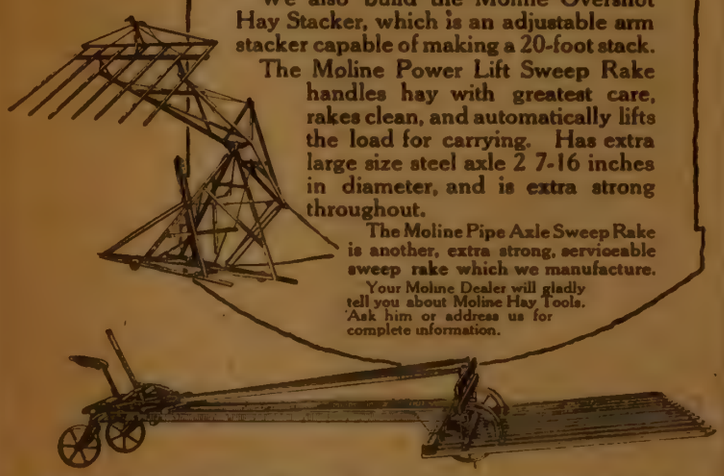
We also build the Moline Overshot Hay Stacker, which is an adjustable arm stacker capable of making a 20-foot stack.

The Moline Power Lift Sweep Rake handles hay with greatest care, rakes clean, and automatically lifts the load for carrying. Has extra large size steel axle 2 7-16 inches in diameter, and is extra strong throughout.

The Moline Pipe Axle Sweep Rake is another, extra strong, serviceable sweep rake which we manufacture.

Your Moline Dealer will gladly tell you about Moline Hay Tools. Ask him or address us for complete information.

The Moline Line of Implements
Plows (steel and chilled)
Harrows
Planters
Cultivators
Grain Drills
Lime Sowers
Mowers
Hay Rakes
Hay Loaders
Hay Stackers
Grain Binders
Corn Binders
Pitless Scales
Spreaders
Wagons
Moline-Universal Tractors
Stephens Salient Six Automobiles



MOLINE PLOW CO., MOLINE, ILL.
MANUFACTURERS OF QUALITY FARM IMPLEMENTS SINCE 1865

Do Stock Shows Do More Harm Than Good?

By J. Charles Kaye

SHOW-RING beauty and productive duty have been too long divorced in animal husbandry. Again and again I have heard buyers of purebred livestock specify that the stock they purchased must come from the breeding herds at home and must have been kept out of the show-ring. This is an unfortunate state of affairs. That in this so-called enlightened age, artificial finishing should have been carried to such extremes that breeding ability and utility were injured or lost to sight, seems almost incredible. Yet this is just where the blue-ribbon craze, combined with artificial judging standards, has been leading us.

Let the breeder of peacocks or silken-furred rabbits strive for beauty alone, but why should the breeder of farm animals follow suit? Overfitting injures breeding qualities. The "fraternity" has begun to realize this. Thankfully we note that the trend seems now to be towards eliminating the show animals as a class and passing judgment upon the true merits of entries which are in good condition, but not over-fat. A sign of the times is the issuance of a 1919 pictorial calendar by one of the big packers, depicting, not the artificial, scenic-poster types so long held up as show ideals, but the practical, money-making, utility types around which the commerce of animal industry revolves.

No doubt the next decade will witness a complete revolution in the standards of show-fitting. If so, the livestock industry will be better off!

Mrs. Phoebe Apperson Hearst

WHEN Mrs. Phoebe Apperson Hearst, beloved California pioneer, passed away at San Francisco on April 13, the agriculturists of the State lost one of their warmest friends and most appreciative champions.

Herself an owner of extensive ranch properties, she possessed the breadth of vision and greatness of heart to recognize the fundamental importance of food production in the upbuilding of the State and the nation. Both by example in the conduct of her own properties and by the generous endowments which she lavished upon educational and scientific institutions, she contributed in a great and wonderful way to the agricultural development of California.

Born December 3, 1842
Died April 13, 1919

But not alone for her interest in and helpfulness towards them will the farmers of her home State revere the memory of this gracious friend. For the story of her life is one of devoted service—of self-sacrifice and thoughtfulness towards others, and there are thousands among the rural population of California who will feel a deep and personal loss in her passing.

Her house was always full of young people. She loved them and their interests, and although there lay behind her a long life of care, adventure and even the hardships that were inseparable from pioneer days in the West, her heart grew younger year by year, while her interest in life and her great philanthropic work grew stronger.

To Mrs. Hearst, wealth meant the means of assisting her fellowmen; it meant the means of acquiring art treasures which she treasured for their beauty rather than their intrinsic value, and most of which she donated to museums and educational institutions.

Abhorring mere display, simple of heart, direct in her ways, she was above all else one of the fellow-beings among whom she lived and worked. And, as such, she was loved and appreciated by the farmers and their families, not only in California, but in the many communities East and West where her interests lay.

The sterling worth that goes hand in hand with what we know as "the homely virtues" is, after all, the foundation of true greatness. And it is such a quality that appeals most to the farmer.

For where is the true agriculturist, working in God's out-of-doors, who cannot differentiate clearly between great and little things, and meet on an equal plane a soul in which there is never any hint of littleness?

Such was the soul of Mrs. Phoebe Hearst, a noble woman whose works will never be forgotten and whose memory will always be revered.

Why the Self-Feeder?

WAR-TIME labor conditions added greatly to the already increasing interest in the use of self-feeders for raising market hogs.

By their use, well-conditioned hogs have again and again been brought to a weight of from 200 to 250 pounds and marketed at six and eight months of age.

The advantages gained by the use of self-feeders have been summed up as follows:

(1) They save labor. Less time is required to care for the pigs.

(2) They save grain. Less grain is required to produce a pound of pork than when fed.

(3) The hog can and will balance his own ration and thus secure the correct proportions of protein and carbonhydrates necessary for the most economical gain in weight.

(4) Greater daily gains are made because more grain is consumed per day; therefore

(5) Self-fed hogs are made ready for market earlier than hand-fed hogs.

The self-feeder is of greater moment to the producer of market hogs than to the breeder. Flesh and fat, rather than frame and size, are the goals attained most quickly by its use.

More important than the construction of the feeder, of course, is the selection of feeds to use with it. The largest compartment may be used for the grain—shelled corn, ground barley, oats, mill run or other ground feeds.

In one small compartment is kept a high-portein feed, such as tankage, wheat middlings, oil meal or cocoanut meal.

The third section is used for a "conditioner," a good formula for which is as follows:

Charcoal	½ sack
Wood ashes	½ sack
Air-slacked lime	4 pounds
Pulverized copperas	2 pounds

Supplemented by pasture or some kind of green feed, together with a good supply of clean drinking water and provision for exercise, a self-feeder with the above feeds comes about as near to efficiency as any hog-raising method yet devised. There is no record of permanent injury to market hogs through letting them have free access to the proper combinations of feed. Quick gains are desired; the pig does the business himself.

Raising Orphan Pigs

IN THESE days it will pay the hog-raiser to give special attention to raising the orphan pigs. Experiments indicate that such pigs thrive best on whole cow's milk, fed as fresh as possible.

When the artificial feeding first begins, the pigs should be fed often—six or eight times a day if possible. The number of feedings each day can be gradually decreased. When the pigs are five to eight weeks old, four times a day may be enough. A small watering trough may be used in feeding, so arranged that the pigs can have access to it regularly. In addition to the milk, a little soaked shelled corn or ground barley may be fed. It is well to get the pigs started on this as quickly as possible. A little later, before the pigs are ready to wean, they may be put on both grain and tankage.

Sow's milk is richer than cow's milk both in sugar and butter fat; some persons believe, therefore, that the milk should be enriched by the addition of some cream and a little sugar, so as to make it correspond to the mother's milk. Experiments indicate, however, that adding sugar is really a disadvantage.

In these experiments when cream was added to bring the fat content up to about 7 per cent, as compared with about 4 per cent of cow's milk, it caused the pigs to scour and they did not do well.

The addition of both sugar and cream was more satisfactory, but the whole milk, unmodified, gave best results.

DOCKING THE LAMBS

A very important step in successful sheep raising, and one which the owner of a small flock is apt to neglect. A hot iron, which removes the tail at one of the joints and at the same time sears the wound, is the most satisfactory means of performing the operation. Lambs should be docked when from nine to twelve days old, but if the matter has been neglected, the operation may be performed at almost any time. Long tailed lambs are usually discounted on the market.

Molasses for Feed

The livestock farmer who has never used molasses will do well to investigate its possibilities. Mixed with other feeds, especially cheap roughness, it adds greatly to their nutritive value as well as their palatability. It is widely used in the Eastern States for wintering animals where they are tided over cold weather on very cheap fodder, and it offers opportunities for California stockmen which they do not yet fully appreciate.

A boatload of Hawaiian molasses, which is expected to arrive at San Pedro about the fifth of this month, will be the first cargo of this kind to enter Los Angeles harbor.

The Farmer of '17 and the Farmer of '76

Each went to war in defense of his country and of the ideals which he held dear.

The farmer of Revolutionary Days beat his plow share into a sword with which to carve out a free America.

The modern farmer performed a similar and an even more important service, for by patriotically yielding to the priority of Government orders which limited the output of the Holt factories available for domestic delivery, he contributed one of the greatest mechanical agents of the war—the "Caterpillar" Tractor.

Through the genius of the military experts of this country and its Allies, this *peace-time* machine, designed to till the soil of a million farms, was adopted for the most strenuous *war-time* uses.

Adopted in armored form as the mighty armored "Tank," which is conceded to have saved 20,000 lives on the Somme in the Fall of 1916 alone.

Adopted as the standard heavy hauling machine by America and its Allies, being used to move guns and caissons and supply trains, making sure that no matter how fast the dough-boys might move, or how muddy or rough the terrain might be, their artillery would be right behind them, ready to lay a protecting barrage at a moment's notice.

Of course, only the "Caterpillar" Tractor would do for the armies' most strenuous work. That is why, when The Holt Manufacturing Company in 1914 put its facilities at the disposal of the Allies, the English and French took practically the entire output of its eastern factory. And that is also why the U. S. Ordnance Department, when it launched the most complete motorization plan the world had ever known, after severe tests adopted "Caterpillar" Tractors exclusively for all the heaviest and most severe work, taking not only the output of the Holt eastern factory, but also engaging scores of other eastern factories on the production of Holt tractors, assemblies and parts.

But at last the stress of war is ended and Holt factories are again on a pre-war basis, strengthened by their war-time service and experience, now again making immediate delivery of "Caterpillar" Tractors and parts.

The same efficiency of principle; the same rugged construction; the same self-track-laying design, turning engine power into draw-bar power with a minimum mechanical loss—all the qualities which won the "Caterpillar" Tractor honor upon the battle-fields of Europe—are at the disposal of American Agriculture as in the days before the war.

Reconstruction time should be tractor time. Write today for full information regarding the "Caterpillar" Tractor. Ask for Catalog 401.

"Caterpillar" Tractors—built only by Holt or under Holt contracts and patents—the only track type of tractor adopted, after rigid tests, for the severe war service of America, England and France.

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WHY PAY MORE?

10,000 large 30-oz. cans Best Table Peaches. Reg. price, 30c; this sale, 2 cans, 45c; per doz., $2.60.
8000 14-oz. cans Best Table Peaches. 2 cans 25c; per doz. $1.40.
Our Very Best Coffee, fresh roasted. 3 lbs. $1.00. (Ground or whole.)
Our Finest Teas. Oolong, Green, Java, Japan mixed, 3 lbs. $1.00.
Del Monte Brand Whole Green or Red Peppers, Reg. sold at 10c. Can 7c; per doz. 80c.
5000 15-oz. Large Oval Cans Sardines, in tomato or mustard sauce. (Reg. 20c.) Can 15c; per doz. $1.70.
4000 (3½-oz. cans) Boneless Sardines in spiced tomato sauce. Can 10c; per doz. $1.10.
10,000 cans Cal. Sardines. Big 7-oz. cans. Something to eat ready to put on table, in mustard or tomato sauce. Delicious. At a price reg. 15c. Sale, can, 10c; 1 doz. $1.15, while they last.

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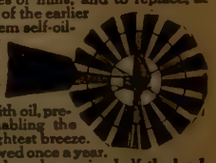
"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.

THE SELF-OILING WINDMILL

has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load.



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"Red Crown" gives greater mileage because it is correctly made, straight-distilled, all-refinery gasoline. Look for the Red Crown sign before you fill.

STANDARD OIL COMPANY
(California)

The Gasoline of Quality

SYSTEM in shop office and field

Disposal of Dead Horse

IF A HORSE has outlived his usefulness, his carcass is worth more alive than dead, for if he is alive he can be taken off on his own legs to the place where he can be best disposed of for fertilizer. When a horse dies on the farm, especially if the place is isolated, it usually does not pay to bother with more than the hide.

In most cases the owner of a dead horse (or cow) can save the trouble of burying the carcass by telephoning to some one who makes a business of gathering hides and can even get a little cash out of the deal. In this locality a live horse is worth about $4.00 to a junk man, while the same man will pay $1.50 for the hide of a dead horse, and skin and bury the horse besides.

Burial Pointers

Whether a horse, or cow, is disposed of in this way or not, it is worth knowing that coyotes and dogs can be prevented from digging up a carcass covered very thinly with dirt, provided a can of pepper is sprinkled thoroughly over the grave. Under ordinary conditions, at least a foot of earth should cover the top of the carcass, but if the ground is too hard to dig a deep hole, very much less dirt will prevent all odor from reaching the air and a can of pepper will keep the dirt from being disturbed.

A great deal of digging can be saved in burying a horse or cow if, after skinning, the legs and neck are cut off from the trunk and the trunk rolled into the hole; then the legs and neck and head fitted into the corners. This is the system used by the men who make a business of picking up old horses and cows.—Tulare Farmer.

Saving Backache

On many small dairy farms the cans of milk are carried some distance from milking barn to milk house by hand. One ingenious Southern California farm lad who wanted to make his head save his back rigged up a trolley wire from the barn to the milk-room, on which he placed an ordinary single pulley from which were hung two hooks (one for each handle of the milk can). Suspended on this simple contrivance, the can is quickly and easily pushed more than a hundred yards morning and evening and useless labor is eliminated.

Usually the milk-shed is on higher ground than the barn, in which case it is necessary, of course, to push the cans, but if it is possible to give the cable or wire a slight inclination, the full cans may be moved by gravity. The young farmer, who applied the idea locally, used a section of old telephone wire. For greater distances a light cable is preferable. One suggested improvement is the addition of a "safety lift," which might be locked in place, so that the cans would not have to be lifted onto and from the hooks. The safety lift is simply a small block and tackle with a locking device, capable of easily raising and lowering the cans. With such a device, it would be possible to elevate the can at the barn to such a height that the wire could be given enough inclination to slide the can to the milk house.

Farm Blackboards

With the passing of the little red school house did not come the discard of the blackboard. In fact, that essential accessory of all school buildings has attained a much larger field of usefulness since the boards became popular among farmers.

The most common farm use for a slate board is, of course, as a roadside bulletin for announcing sales and wants. But there are other uses. One economical dairyman, who wanted to post the names of his cows above the stalls, hit upon the plan of using neat blackboards instead of the expensive metal or printed signs frequently employed. Then if the cows were changed about, sold, or traded it was not necessary to throw away and change signs, but simply to erase and re-write. The same board is used by the herdsman for posting other information about each animal, as desired.

Modern Lighting Plants

The home electrical plant is no longer a weird contraption of uncertain propensities, apt to go out of order right in the midst of supper and to plunge the home into the comparative semi-darkness afforded by resurrected oil lamps and lanterns.

No, indeed! The modern lighting plant is practically "fool-proof" and self-operating. One of the more advanced types starts itself whenever the battery needs charging and automatically stops when sufficient current has been generated. The use of better materials and more advanced engineering principles has made the modern home lighting plant, just a few years after its inception, one of the most efficient and dependable pieces of "farm machinery."

"The electrical brain" is the name applied to the automatic control. A little gasoline and oil, occasionally administered, supply the energy controlled by this remarkable device and converted by it into light, heat and power.

Grafting Wax

County Horticultural Commissioner G. R. Gorton of San Diego advises that growers in his locality are using the following formula in making a grafting wax, intended to be applied cold:

Resin, 1 pound
Turpentine, 1 ounce
Alcohol (denatured), 8 ounces
Linseed oil, 1 ounce.

(Melt resin and add turpentine and alcohol.)

Commenting on this, Commissioner Gorton says: "The appearance of it on the trees was very good indeed, as it made a perfect protection for grafts, upon which it had been used, and seemed to stand up well after application."

For Choking Animals

I have found that an efficacious remedy is to mix fine-cut tobacco and molasses into a ball about the size of a hulled walnut and drop it down the animal's throat as far as possible. The tobacco seems to make the animal relax the muscles of the throat, usually producing nausea, and the obstruction is either swallowed or thrown out.—Mrs. Ed DeL.

Saving Prunes in Wet Weather

How a 1918 crop was dried, practically without loss, in a San Joaquin County orchard.

I ASSISTED last year with a prune crop in which we handled 40 tons of the dried product with a loss of only 500 pounds. I feel assured, therefore, that the method used, if followed closely, would be beneficial to others. We started as early as the prunes would shake easily, and "crowded" them right through. Our idea was that a prune that would shake without carrying a stem with it was ripe enough to dry. That this theory was correct was demonstrated by the fact that prunes so "crowded" dried more easily, did not stick to trays nor cake in bins and showed practically no inclination to mould.

We were also convinced that the crowding method did not, as might be expected, reduce the percentage of sugar.

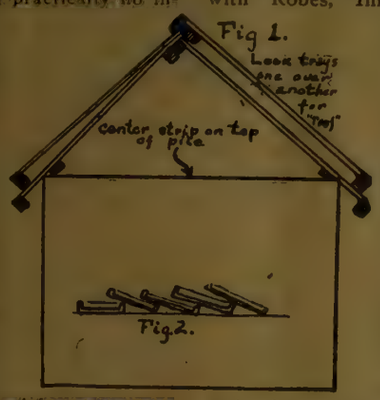
Since our neighbor adjoining had a 80 per cent loss, our success cannot be considered a lucky or accidental. The time consumed in digging caked prunes out of bins and turning to prevent caking is usually less than that required for going over the trees three or four times.

Caught by Rains

When the early rain came we had out a thousand trays in the drying yard. At the first drop of rain, we stacked them twenty trays high and covered them with four trays in the form of a roof as illustrated. Some of these had been dipped only six hours and it was six days before we had sufficient sunshine to lay them out.

In laying them out, we placed them as in Fig. 2, so that any water that might have run in among the fruit could drain out and so that the shakes could not draw moisture from the damp ground. We stacked them each night and laid them out in the morning—one hour's work for six men.

This experiment was conducted with Robes, Imperials and sugar prunes, and almost our entire loss was with the Imperials, as they seemed to mould more easily.



We also had some two hundred boxes that we let stand for six days without dipping, and had we dipped them immediately and stacked them, I firmly believe our loss would have been cut in half. For this reason, I recommend that in case of rain the pickers get in the orchard as soon as possible, gather, dip and place in stacks all ripe fruit, and be prepared to lay it out the moment the sun shines.—E. E. Davis, Linden, Cal.

A Shoe Cleaner

"I WONDER if the men will ever stop tracking mud through the house," said Mrs. Brown despairingly to her assistant after a heartened look at the clean-rubbed kitchen floor. As usual, after a rain, it bore the marks of boots which had been given a "lick and a promise" with the old broom which stood on the back porch.

Then Mrs. Brown had an idea. Instead of simply talking, with no avail, it would provide a better means for cleaning the boots. And the result was that when Johnny came home from school his mother enlisted his services and they very soon constructed a "three way shoe cleaner." It was nothing more than a small box (with the top and both ends knocked out) to the bottom and each side of which was fastened a scrub-brush. It was made of the proper size to admit the foot of the average man's hand, and, of course, that would be very small.

The shoe, when rubbed back and forth between the brushes was cleaned on the bottom and both sides. Supplemented by the regulation door scraper, this simple device relieved Mrs. Brown's kitchen floor problem and gave the men an incentive to enter the house with clean shoes.

Later a smaller cleaner was made for the children.

To Mend Granite Ware

Press a small piece of putty into the hole. Smooth and place in a hot oven until brown. Then brush over with enamel, which is already prepared and may be purchased at hardware and paint stores. When the enamel dries the utensil will be practically as good as new.—Mrs. Ed De Ruy, Columa, Cal.

To Kill "Brakes"

Many acres in California are considered valueless on account of brakes or ferns, which form such a thick mat not only above the ground but in the root system. In many cases, in fact, it is almost impossible to cut through the ferns with a plow.

The ferns may be eradicated by allowing them to attain full growth and then mowing them several times during the summer, taking care to cut two or three inches above the ground, so that the stems will "bleed" and exhaust the roots.

The following year the plants will be nearly all killed and the roots dry and brittle; the stand of such plants as remain will be light and stunted. It is then possible to plow the ground, and it will be found that the roots, instead of having harmed the soil, will have improved it through leaving it more porous and richer in organic matter.—Mrs. Ed De Lory, Coloma, Cal.

Leaky Pens

If you have a fountain pen that leaks around the joints, especially if it is one of those having a point which disappears at the turn of a section of the barrel, try an application of heavy oil.

To remedy the defect, soak the pen in warm water, not hot, and allow it to dry, particularly inside. Then apply oil on the spindle which revolves. The oil should be worked through the bearing from end to end. You can now refill the pen and wipe off the excess oil. A heavy cylinder oil is best for this purpose.

To unscrew the parts of a fountain pen which have become set, merely heat the pen with hot water or by holding it near a flame, but be careful not to get it too hot for there is danger of melting. While pen is heated a slight twist will often loosen the set.—Frank P. Goeder.

No Ice Needed

Pittman Concrete Iceless Refrigerators

Keep All Foods Better

Mrs. A. F. Cook of Dunnigan, California, writes:

"We have had a Pittman Concrete Iceless Refrigerator since last spring and have found it very satisfactory, indeed. It keeps the bottles of milk cool even in the hottest spells of the summer. All food is kept cool as the refrigerator affords a good circulation of air. This keeps the interior sweet and odorless. It is very simple to clean, which is another good feature."

The refrigerators are made of cement and keep cool by the evaporation process. No expense after the first cost. Shipped anywhere, pays for itself in two seasons; two sizes; sold direct to consumers. Please write for other information. Prices and sizes will be mailed upon request.

Universal Concrete Products Company
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The Louden line includes Stalls and Stanchions, Litter and Feed Carriers, Dejachalds Water Bowls for Cows, Power Hoists, Cupolas, Ventilators, etc. Write for particulars.

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Reliable, safe, convenient; a saver of time, labor and money. Write for catalog.

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Get it under cover in record time. Cut down your labor cost. Eliminate repairs.

You can do it with Louden Hay Tools. Louden equipment costs less than the loss of a ton of hay. Try it out this season. It will save you time, labor and expense. It will help you save the crop.

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REGISTERED DUROC-JERSEYS

You can bank on this breed of hogs. The demand is greater than the supply. We can supply you with weanling pigs, either sex, and gilts from 7 to 10 months. Our herd boar has the blood of Ohio Chief, Defender, Crimson Wonder, Jack's Friend, Joe Orion, etc., and was a prize winner at State Fair last year.

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Route 4, Box 735, Sacramento, Cal.

Stacking Hay Without Turning a Wheel

How alfalfa is handled in record time on a big Nevada ranch where labor is scarce. The system here described is said to be the simplest and most efficient ever devised for stacking hay in enormous quantities, when speed is essential but quality must not be sacrificed.

By J. Charles Kaye

"BUT where are your hayracks and wagons?" I asked of Burt Freeman, manager of the Cool Shadow ranch, as we leaned on the fence surveying the big alfalfa field, where preparations were being made to commence stacking in the afternoon.

"We do it a little differently here in Nevada," he shouted, to make himself heard above the clatter of the mowing machines, which were just passing us. "We get along without wagons."

"Oh; use bull rakes?" I suggested.

"Nope. Just boats."

"Now, see here, Mr. Freeman," I expostulated. "Don't stuff me just because I'm a stranger in a strange land. I know water's about as scarce as hens' teeth here, and, anyway, who ever heard of stacking hay with boats?"

"Well, that's what we call 'em, anyway. Come over here and I'll show you one."

Showing construction of the sling. Tripping device is shown at center of two sticks, which man is holding on end. When he starts for the field, the sling will be spread out flat on the boards, with the catch locked.

Study in "Navigation"

The "boat," it developed, was nothing more than a flat-bottomed slip, about the size of the bottom of a hayrack, perfectly smooth underneath and equipped with a simple brace at each end. It resembled an ordinary hayrack taken off the running-gear and laid on the ground. The cleats which held the bottom boards together, however, were nailed across the top, so that it could slide smoothly over the stubble in the field. Equipped with evener and clevis, this device was used entirely for transporting the hay from cock to stack. I noticed that a three-horse evener was attached to each "boat."

"We use three animals," explained the foreman, "because it is just a little hard on two to work rapidly all day. In this way we make use of some of our old pensioners and also break some colts every year. A young colt, hitched between two gentle horses on one of these contrivances, soon steadies down; and even if he does start something, there isn't much to break up. Two good horses, however, can easily handle a boat, if necessary, and carry, each trip, all that the derrick can handle."

I realized that I was about to witness a very unusual scene, with all the operations of haying going on at one time. Near us the mowers were running. Just back of them two rakers were busy. And still farther back a crew of men were moving and placing the big derrick, preparatory to commencing the first stack. The derrick was a home-made affair, sliding on heavy skids. Its construction is readily seen in the accompanying photograph. Equipped with pulleys and wire cable, and supplied with power by an old team of plodders, it easily swings a boatload of hay to any desired point over the stack.

How Hay Is Raised

No stacking fork is used. The hay is handled by means of rope or chain slings, which are spread out upon the boats before they are loaded. Each sling consists of two sections, which are fastened together at the center with a catch, released by means of a trip rope. When spread upon the boat, the sling is held up at each end by means of a ring, slipped over a spike, driven into the end piece of the boat. When the boat is loaded, the rings are removed from these spikes, brought together over the load of hay and fastened to the hook on the derrick cable. When the load has been swung up to the desired point, the stacker gives a signal and the man on the ground jerks the trip-rope, which opens the sling and drops the load. The cable is then returned to the ground and the sling spread out again on the boat, which returns for another load.

The system in use on this Nevada ranch is one worthy of explanation, as it seems to result in the most efficient use of labor and time. The conditions are, of course, peculiar to that section, but this method of making hay has been successfully used in California and nearly all the other Western States.

The hay is usually raked the second day after it is mowed and, having lain in the swath for this length of time, is thrown first into windrows and then into rough cocks, none of which is too large for two men to fork up. After the second day, the rakes work right along behind the mowers, two rakes usually keeping up with five or six mowers. The field in which the photographs were taken consists of nearly 300 acres. It contains some gravel, which makes it necessary to rebuild the boats every season, but even with this added expense the owners believe their method to be much more economical than any other.

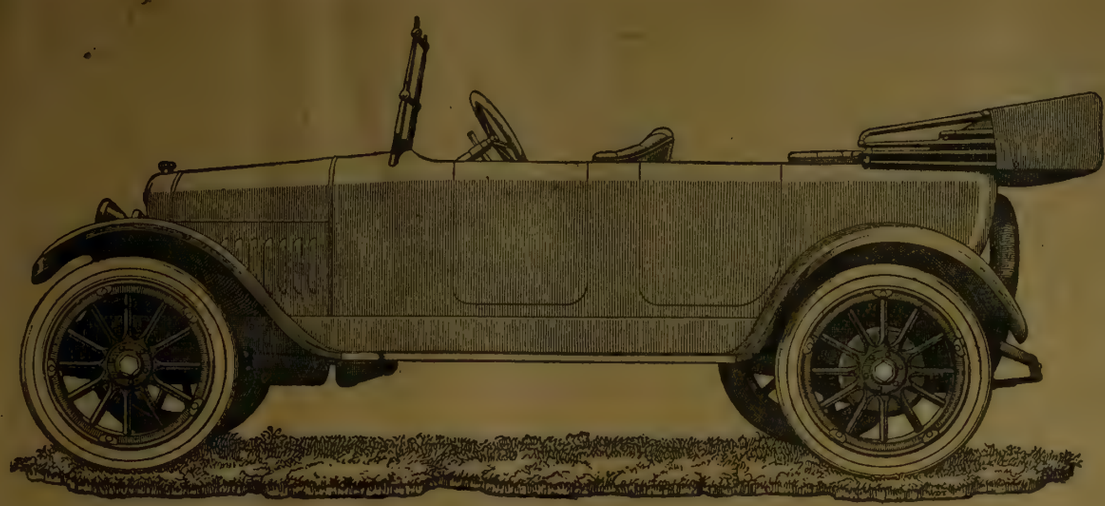
The hay is all fed on the ranch and is rather roughly stacked, the stacks frequently containing more than 100 tons each. Handled in this way, it cannot be said to equal in quality the carefully cocked and cured hay raised for market purposes on smaller farms, but it is of excellent grade and serves admirably the purposes for which it is grown. There seems to be much less shattering of leaves, moreover, than when the hay is thrown onto wagons and handled with the "Jackson" fork. The advantage over the "bull" or sweep rake and automatic stacker, the foreman pointed out, is that the hay can be handled much more rapidly and the "boats" can be used on ground too uneven for the sweep. There is also less shattering and waste in moving the hay from cock to stack, while the equipment can practically all be made on the place.

The Stacking Crew

The crew consists of a stacker, a derrick boy, four boat-drivers and a field man. The latter assists with the loading in the field, each driver also having a handfork and loading his own boat. The stacker is usually an experienced man, paid considerably

(Continued on Page 40)

The trip-rope is attached as the load swings clear and is jerked, on signal, when the hay reaches the desired point over the stack. The illustration at the right was taken at the moment the sling opened. Below is shown the driver, holding the trip-rope as the load leaves his "boat."



The movement to better Cars in which Maxwell shares

OBSERVATIONS recently made among farmers show a marked tendency to buy better automobiles. They want a little more luxury, and at the same time don't care to waive the consideration of economy.

For a motor car to a farmer is a piece of time-saving, comfort-giving, dollar-saving machinery.

Hence the tendency toward Maxwell has a good reason behind it.

For this car has not only a self starter, and demountable rims, but other points of luxury that make it popular on the boulevards of the big cities.

Still it is not a "boulevard" car. For it is built to stand the gaff of rough and ready use, good roads and bad, mud and concrete, a trail as well as asphalt.

It is built to be everlastingly reliable. And this is how reliability has come to be its middle name.

Five years ago a very simple chassis was designed. Simple so that it would be easy to build, easy to run, free from trouble; and simple so that it would have no "grand opera moods."

Today 300,000 Maxwells have been built on this original chassis plan. More than 1000 improvements have been made; but never one single radical change in design.

There is scarcely a greater business monument to the policy of doing one thing and doing it well than the product of the Maxwell Motor Company.

It saves you money three ways and returns you a sum of satisfaction on which you can draw interest for 100,000 miles.

$895 f. o. b. Detroit.

Maxwell

More miles per gallon
More miles on tires

MAXWELL MOTOR COMPANY, Inc., Detroit, Mich.

He can have my shirt now

VER THERE, somewhere in Germany, I've got a kid brother. He's been in the fight since the beginning and now they've made him a corporal and sent him up to our bridgehead on the Rhine.

I've watched that kid grow up from a baby. I've helped him out of scrapes. I've raised the devil with him for getting fired from school and cussed him out for ducking the lawn-mower job. I've loaned him money I never expected to get back—and never did.

A couple of years ago I came home one day and found the little son-of-a-gun wearing my favorite shirt. We had a family row and I made him take it off.

Yesterday I had a letter from him. It was written with a pencil, over a month ago.

He told me about the fellows he was with and asked about the family. He told me about the work our soldiers are doing along the German border and what a tiresome job it is now that there's no more fighting. He said he'd be home when his job is over.

That kid can have anything I've got—I'm going to finish my job, too

And then the little devil asked me if I remembered the day I made him take off my shirt.

Well—

Until I got that letter I had a comfortable sort of a feeling that the War *was* over—that I had done about all that my patriotic duty called for, that my part of the job was finished.

But that letter woke me up.

It made me realize that a regular American doesn't put his Patriotism on the shelf when the guns stop booming.

If that kid is going to stick to his job until the whistle blows, I'm going to stick to mine.

I'm going to dig in and help oversubscribe this Victory Liberty Loan.

And be glad that I have the chance.

This space contributed by

American Telephone & Telegraph Company

GOVERNMENT LOAN ORGANIZATION
Second Federal Reserve District
Liberty Loan Committee, 120 B'way, New York

IS $29.60 ADDITIONAL PROFIT A YEAR PER COW OF INTEREST TO YOU?

IS AN ADDITIONAL DAILY GAIN OF APPROXIMATELY FIVE-TENTHS POUNDS IN FATTENING HOGS OF INTEREST TO YOU?

IS THERE A LOT OF ROUGHAGE NOW ON YOUR FARM BEING WASTED JUST BECAUSE IT IS NOT PALATABLE?

You can make this additional profit; you can get this increased pork production, and you can turn what is now waste into profit by using that great CONSERVATION FOOD, PURE HAWAIIAN CANE

MOLASSES

Write us at once and let us tell you how.

W. H. YOUNG COMPANY
58 Sutter Street, San Francisco.

Where Do We Go From Here?

(Continued From Page 8)

that one of the younger girls could give you what little care you needed and told me to put in all my time on night duty in the one ward. Then I have been so used up that when I was relieved I just rolled into bed and slept. What time do you go in the morning?"

"About daylight, they said."

"Then you must get some sleep. Now will you promise me to stay in bed? I will waken you in time to go."

"Yes, Florence, if you will surely call me. They won't wait, you know. They must meet the train. Good night, you dear. I wish you would do just one thing for me before you go."

"And what is that, honey?"

"Hand me the little leather photograph case from my bag. I had it all packed. I guess I am rather foolish—but I want to look at my pictures before I go to sleep."

"You're a baby, but you shall have what you want," replied Florence, and going to the bag, delved among its fearfully mixed contents until she found a small album of several leaves. As she lifted it, one picture dropped out. She stooped to pick it up. The blood rushed to her cheeks as she read the inscription in the moonlight: "To my little girl. With all my love, Jack." Quickly she put it back in the folder and handed it with a jerky motion to the girl on the cot.

"Why, what's the matter, Florence?" said Winifred. "You look so pale!"

"Oh, nothing, dear—just a little faintness. I've been working too hard, I guess. Good-night. I'll call you. Now stay in bed. Good night."

Momentarily Winifred wondered at the huskiness of her friend's voice, but soon she was again occupied with her own thoughts. She did not obey orders, however. Instead, she rose and dressed completely for her journey, except for her hat and the heavy black veil which she had provided to hide the terrible marks upon her face. Then, placing a much thumbed photograph upon the casement, where the moon light could stream across it, she sat as before with her chin cupped in her hands, prepared to while away the long hours until daylight.

CHAPTER VI

Perhaps it was well that no superior was on duty that night to check up Miss Tilden's work. Twice she was chided by her assistant for her awkwardness. Each time she pleaded loss of sleep and overwork as her excuse, but in the other nurse's mind many conjectures were revolving. Ever since the young officer in the alcove had arrived, nearly a week before, Miss Tilden's obvious absorption in his welfare had been a matter of great interest to the other members of the staff. Now the assistant was trying to connect the affair with the red eyelids and pathetically drooping lips which Florence tried so ineffectually that night to conceal.

It was not until nearly morning that she again approached the alcove where the lad with sightless eyes was tossing restlessly. Without a word of greeting, she placed her cool hand on his forehead. Immediately recognizing her touch, he became quiet at once.

"Couldn't you come back sooner?" he asked.

"No, Boy, I was so busy at the other end of the ward. One of the poor fellows had a very bad time. I had to use hot applications. Listen. Can you walk at all yet?"

"I was in a wheel chair day before yesterday, Flo. And yesterday I walked across the room and back. Yes, I could go quite a distance now if I took it slowly. Why do you ask?"

"We are thinking of transferring some of the boys in this ward. I thought maybe you could walk up the hall to another room after a while." She sat down on the edge of his cot. Her voice was sure and steady; her motions decisive, her face pale, but peaceful and serene.

"It is just about daylight. Poor boy, you haven't slept, have you? I will get you a dressing gown and slippers. You can slip them on and when I return I will take you to a quieter room and perhaps you will be able to sleep."

She brought the things and then slipped out into the hall. Winifred's door was slightly ajar, and she peeked cautiously in to see if she were awake. There she sat, still at the window, watching the moonlight paling before the rising sun, and dressed as for the street.

"You naughty child," she scolded, after tiptoeing into the room. "Didn't I tell you to stay in bed?"

"I couldn't sleep, Florence. I didn't catch cold, though. It was warm here. It is almost time for me to leave. We shall have breakfast at the railway station, they said. I am all ready to go."

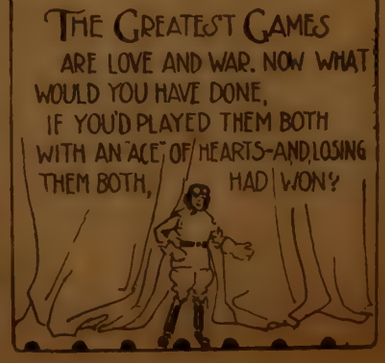
"Back in a minute," said Florence, and as she turned toward the door she slipped Winifred's heavy veil from the table and stuffed it quickly in the pocket of her uniform. Then, returning to the main ward she grasped the arm of the blind soldier and started with him slowly toward the door.

"I am stronger than I was yesterday," he said. "I can walk alone. See?"

She steered him through the door and turned him up the hallway. "I will get your medicine and follow you," she said. Just feel your way along the hall until you reach the third door on the right. Go in; you will find a chair near the door, where you can sit until I come."

But she did not follow him. Instead, she flew down the stairs and to her dormitory, where she emptied the bureau drawers into her suitcase, discarded her uniform, donned a heavy coat, and fastening Winifred's veil about her head, slipped down the back stairs, through a side door across to the hospital building, and thence along the sidewalk to the front. A big army car was waiting, its motor humming lazily.

The uniformed chauffeur sprang to the ground and took her suitcase, assisting her to the vacant seat beside him. The happy discharged patients were already seated. They cheered as she joined their party. The chauffeur pressed the throttle and the hum of the powerful engine changed to a roar as they rolled into the main road. The doctor and a group of hospital attendants waved good-bye from the steps of the building, and faintly, as the car gained momentum and swung in a cloud of dust toward the distant station, there drifted back to them a snatch of soldier song: "Where do we go from here, boys, where do we go from here?"



Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, Examiner Building, Los Angeles.

2805-2820—Lady's Costume

Waist 2805 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 2820 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. For the waist in a medium size, 2¾ yards of 36 inch material is required. For the skirt, 3 yards. Width of skirt at lower edge is about 1⅝ yards. Two separate patterns, 10 cents for each pattern.

2813—Girl's Dress

Cut in 5 sizes: 2, 4, 6, 8 and 10 years. Size 6 will require 2¾ yards of 36-inch material. Price 10 cents.

2808—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. Size 8 requires 3½ yards of 27 inch material for the dress, and ¾ yard for the bolero. Price 10 cents.

2809—Lady's Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 will require 6 yards of 44 inch material. Widths of skirt at lower edge, is about 2 yards, with plaits extended. Price 10 cents.

2816—A Pretty Frock

Cut in 4 sizes: 14, 16, 18 and 20 years. Size 18 will require 6¼ yards of 27 inch material. The skirt measures about 2 yards at the foot, with plaits drawn out. Price 10 cents.

2806—Lady's Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42, and extra large, 44-46 inches bust measure. Size medium requires 4¾ yards of 36 inch material. Price 10 cents.

2819—Child's Dress

Cut in 3 sizes: 2, 4 and 6 years. Size 4 requires 2¾ yards of 36 inch material. Price 10 cents.

2807—Boy's Suit

Cut in 5 sizes: 3, 4, 5, 6 and 8 years. Size 4 will require 2⅛ yards of 40 inch material. Price 10 cents.

2802—Lady's House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 will require 6 yards of 36 inch material. The dress measures about 2⅛ yards at the foot. Price 10 cents.

Catalogue Notice

Send 10 cents in silver or stamps for our up-to-date Spring and Summer 1919 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also some points for the needle illustrating 30 of the various, simple stitches, all valuable hints to the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find .....cents, for which send me the following patterns:

Pattern No..... Size.....

Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, Examiner Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below

Mr. Farmer—If You Grow Raisins - Prunes - Peaches - Pears - Apples - Grapes You Need a SAHARA DRIER.

Every year your losses run into thousands of dollars because of adverse weather conditions—over-ripe products, etc. **THE SAHARA DRIER** guarantees you against such losses. It is the cheapest and best insurance possible. You carry insurance on your house, your barn, your automobile, but not on your crops. Last year the California growers lost thousands of dollars because of the early rains. It may happen again this year. Can you afford to take the chance?

THE WINE GRAPES must be dried and they will then find a ready market. Most of the California growers are making ready to dry their 1919 crop. The "Sahara Drier" is the most efficient and inexpensive machine on the market. It will do the work in from 8 to 12 hours and give you a more uniform product than by the sun process. It is metal and asbestos construction—fire and foo proof. No expert help needed and fuel cost should not exceed 50c per day Dimensions are 16 ft. x 8 ft. x 6 ft.

WE GUARANTEE the machine to give satisfactory results. Our patented process makes this possible. Prices are $650 and $850 for our one-ton-per-da drier. See our representatives for particulars.

Cameron & McDonald, Chico, Calif.
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CALIFORNIA DRIED PRODUCTS CO.,
Home Office: 149 California St., San Francisco, Cal

Statement of the Ownership, Management, Circulation Etc., Required by the Act of Congress of August 24, 191

OF

ORCHARD AND FARM

Published Monthly at Los Angeles, California.

for April 1, 1919

STATE OF CALIFORNIA,
COUNTY OF LOS ANGELES } ss

Before me, a Notary Public in and for the State and County aforesaid, person appeared W. Tyler Smith, who, having been duly sworn, according to law, deposes says that he is the Business Manager of the Orchard and Farm and that the follo ing is, to the best of his knowledge and belief, a true statement of the owners management (and if a daily paper, the circulation), etc., of the aforesaid publicat for the date shown in the above caption, required by the Act of August 24, 1912, e bodied in Section 443, Postal Laws and Regulations, printed on the reverse of form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor business managers are:

Name of	Postoffice Address.
Publisher, Country Life Pub. Co.	Los Angeles,
Editor, J. C. Knolliu	Los Angeles,
Managing Editor, J. C. Knolliu	Los Angeles,
Business Manager, W. Tyler Smith	Los Angeles,

2. That the owners are: (Give names and addresses of individual owners, o a corporation, give its name and the names and addresses of stockholders owning holding 1 per cent or more of the total amount of stock).

William R. Hearst, President	New Y
M. F. Ihmsen, Vice President and Treasurer	Los Angeles,
A. T. Sokolow, Secretary	Los Angeles,

3. That the known bondholders, mortgagees and other security holders, ow or holding 1 per cent or more of total amount of bonds, mortgages or other securi are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, st holders, and security holders, if any, contain not only the list of stockholders security holders as they appear upon the books of the company but also, in c where the stockholder or security holder appears upon the books of the compan trustee or in any other fiduciary relation, the name of the person or corporation whom such trustee is acting, is given; also that the said two paragraphs co certain statements embracing affiant's full knowledge and belief as to the cir stances and conditions under which stockholders and security holders who do appear upon the books of the company as trustees, hold stock and securities capacity other than that of a bona fide owner; and this affiant has no reason t lieve that any other person, association or corporation has any interest direct or rect in the said stock, bonds or other securities than as so stated by him.

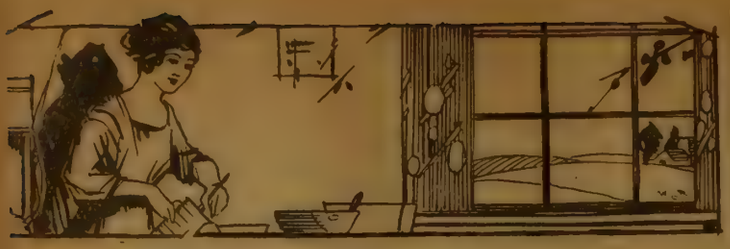
5. That the average number of copies of each issue of this publication so distributed through the mails or otherwise to paid subscribers during the six m preceding the date shown above is 39,860.

(This information is required from daily publications only.)

(Signed) W. TYLER SMITH, Manager

Sworn to and subscribed before me this 21st day of March, 1919.

(Seal) H. O. HUNTER, Notary Public
(My Commission expires May 17, 1



Helpful Hints for Housewives

Edited by Isabel Sinclair

AY brings thoughts of school vacations and the problems that arise therefrom. These have cipally to do with that eternal tion, "Mother, what can I do?" lessons out of their minds the and girls must seek some means orking off their excess energy and g their active brains.

seems to me, however, that in these vacation does not offer nearly so h cause for worry on the part of nts as it formerly did. The reason be found in the revision of ideas t education, whereby the interest e children in productive work is ined even after the doors of the ols have closed. The boy who be- interested while in school in cultural work and engages in fol- g up his "project" during the ner by raising something of his is on the right path to rapid and development. His mind is too busy ncoct mischief.

e girl who belongs to a club whose bers are engaged in some work ving good-natured rivalry and cer- reward has a tremendous advan- over the one who has no objec- during the summer but that of g amusement.

ents, get behind the "club idea" ou will find vacations no longer nsome.—Isabel Sinclair.

Egg Recipes

French Omelet

espoons hot 4 eggs.
r. ½ tablespoon salt.
spoons butter. 1-16 teaspoon pepper.

t the eggs slightly, just enough yolks and whites, then add the ater and seasoning. Put the but- a small hot frying pan and when l turn mixture into the pan. this is cooking, mix slightly fork until the whole is of a y consistency. Place on a hot- rt of the fire and allow to brown y underneath. Bring all together side of the pan and carefully out on a hot platter. Garnish rve while hot.

Spanish Omelet

and cook a French omelet. with tomato sauce in the center ound the omelet.

Tomato Sauce

spoons butter. ½ tablespoon capers.
lespoons 3 tablespoons mush-
omatoes. ½ teaspoon salt.
e. 2 tablespoons flour

vn onion (finely chopped) in and flour. Cook the tomatoes he onion for 15 minutes. Add pers, mushrooms and seasoning. ired, substitute 3 tablespoons nd 2 tablespoons chopped red s for the capers and mush-

Egg Souffle

poons butter. ½ cup cream.
espoons flour. 1 teaspoon salt.
milk. Cayenne.

m the butter, add the flour, and lly the scalded milk and cream. n double boiler 5 minutes and yolks of eggs which have been until lemon colored. Add sea- and fold in stiffly beaten Turn into a buttered dish, set n of hot water and bake until

NO room in the house has undergone such a radical change in the last decade as the bedroom. Useless fancywork and draperies have been discarded, and the furniture is chosen with the idea of keeping it clean with the least possible amount of labor.

The dust and germ laden carpet is banished, and in its place we have, if circumstances permit, polished hardwood floors. Paint and varnish, however, will prepare any good pine floor for the use of rugs. A coat of light tan paint will fill the pores of the wood. Then a coat of floor varnish containing a little oak stain may be applied. It should be given plenty of time to dry.

If the floor is rough and there are wide cracks between the boards, it may be best to put down one of the new linoleums which are made in imitation of hardwood.

Probably the best and most popular rugs for the bedroom are the old-fashioned rag rugs. The colors should harmonize with the color scheme of the room in which they are used. They are sometimes woven in a long strip in such a manner that when they are cut in three pieces and the widths sewn together they make a 9 by 12 rug with a border across the ends.

Many persons, however, prefer several small rugs, for they are easier to handle and can be washed when they need it. Save your rags until you have enough to make the rugs you wish, then tear them in strips about one inch wide, lap the ends, and sew them together. Roll them in large balls and send to the weaver, who will tell you how many pounds you will need. Your white rags are the most useful for rugs, for they may be dyed any color you wish and you can be sure of having pretty colors that do not fade. Clouded stripes are very desirable for borders. To obtain this effect, make the rags into skeins and tie bands of rags around each skein in two or three places before dipping in the dye. Where the band is tightest the rags will be left almost white and will shade into the deeper color of the part left free.

Blue and white is a very common color scheme for bedrooms, and almost any combination of blue and white is pretty for rugs. Those made in shades of tan and brown are lovely for a yellow room.

When cleaning day arrives, the rugs are taken up and beaten, the floor swept with a floor brush and wiped with a dustless mop. Then the rugs are put in place, and one has a perfectly clean floor without raising a dust, which is certainly an improvement over the old method.—E. J. C.

Some Clothing Hints

The following methods will help to extend the length of wear of dresses and other garments:

Sponging with hot vinegar will make the "shiny part" of any garment less noticeable.

Steaming over the tea kettle a velvet hat which has lost its freshness will greatly improve its appearance

Fresh collars and cuffs of white or contrasting color will give a suit or dress a new appearance.

The uniform of

THE UNI

The perfect loaf! It is one thing to hope for it another thing to *know*, in advance, that you're goin

And this is the assurance, the certainty, tha every sack of Sperry Drifted Snow Flour. This s form of The Uniform Flour. It identifies the ve you can use in making bread.

And not because *we* say so—but because scientif pert chemists, manufacturing tests by expert mill tests by expert home-bakers—all combine to make so uniform in high quality that you may be sure, i the best results from your baking and cooking.

Whether you buy a small sack or a large sack Sperry Flour—you can depend on its absolute uni the Sperry trademark on the Sperry sack is an mark of super-quality, a protection *in every home.*

Ask for Sperry Drifted Snow Flour at—
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Ten mills and forty-one distributing points on the Pacific

ORM FLOUR

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ctical
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SPERRY WHITE BREAD

1 cup Boiling Water
1 tablespoonful Melted Shortening
1 tablespoonful Sugar
½ yeast cake dissolved in ¼ cup of luke warm water.
1 teaspoonful Salt
Between 3 and 3½ cups Sperry Flour

All measurements should be level. Flour should be sifted before measuring.

METHOD OF PREPARATION

Put shortening, sugar and salt in boiling water; let stand until luke warm. Add dissolved yeast and Sperry Flour gradually, beating well until too stiff to stir. Then turn on moulding board and knead in remaining flour until mixture is smooth and elastic to touch, and bubbles may be seen under the surface. Return to well-greased bowl, brush dough over with melted shortening, cover and allow to rise in a warm place to twice its original bulk, then cut down. This is accomplished by cutting through and turning over several times with a case knife. Let rise again, when the dough will be ready to shape into loaves or rolls. Place in well-greased pans, having them about half full. Brush over loaves or rolls with melted shortening or milk, let rise again to double its bulk and bake in a hot over about forty-five minutes for a medium sized loaf; twenty minutes for rolls.

This quantity is for one loaf of bread and with the amount of yeast given to each cup of liquid, bread can be made and completed in about five hours. If a longer period be given to the rising process, less yeast will be required. One-fourth cake to a cup of liquid may be used if bread is set over night. In either case the same method is used. Also the liquid can be half milk and half water, or all milk if desired.

Above is the famous Sperry Standard Bread Recipe, which has proven good in many practical kitchen tests by our home-baking experts. It will insure your getting a perfect loaf every time if you will only follow the directions carefully.

Bread—the Everyday Miracle

FAMILIARITY does not always breed contempt; witness, that "commonest" of all articles of diet—bread. Among the highest and the lowest, the richest and the poorest, bread is the one great staple prepared food which never wanes in popularity.

Because bread is so ordinary a part of our daily diet, we are apt to accept almost any palatable product which goes by that name without regard to its content of nourishment. Really good bread is not as "common" as one might think. Yet, the day is past when consumers can be satisfied with any kind of bread.

The Search for Perfect Bread

The United States Department of Agriculture at Washington employs a staff of experts who are searching the world over for wheat which will make perfect bread. The various State experimental farms also are striving by improvement and selection to "breed" better wheat. Millions of intelligent farmers are employing the results of these scientific investigations in the raising and developing of a perfect wheat, the kind necessary for a perfect flour. The machinery manufacturers and the millers, representing investments of millions, all are striving towards the same end.

Millions of men, millions of horses, millions of machines, millions of dollars are involved in the making and improvement of bread.

The Story of Flour

The first flour was made by crushing barks of trees, seeds of grasses or dried roots between stones. This powder was moistened with water and a dough was formed. The dough was then spread in the sun to dry. This probably was the first food cooked by man, and the sun's rays were the first "oven."

Gradually, as the methods of grinding improved, the meal ground between the stones became finer. Grains were first found wild and then cultivated. And as the desire for better living grew year after year, generation after generation, century after century, every faculty of man was used to make possible a better and more nutritious food from flour.

The Housewife's Part

The miller has done all he can when he has furnished a flour which contains all the prerequisites for good bread-making. The responsibility of taking the perfect product of the miller and making it into a palatable and nutritious article lies with the housewife or baker.

Compressed yeast is most convenient for general household use. It is grown in vats of malt, where the yeast cells rapidly multiply by the fermentation of the liquids. It is then washed, pressed into cakes and wrapped in tinfoil for distribution. Yeast, using the constituents of the dough for food, has the power to change some of the starch into a kind of sugar known as dextrose. For no living thing, plant or animal, uses starch as such in the building and maintaining of its structure. Starch is insoluble, while sugar is soluble. It is also thought that a digestive ferment of plants called diastase, retained in the flour, may start this change from starch to sugar in the dough. From this sugar fermentation alcohol and carbon-dioxide are produced. Carbon-dioxide is a gas and when caught and held by the dough expands it as all gases do. This is called "raising the dough." If the raising process goes on for too long a time, acetic fermentation follows the alcoholic change. This causes the dough to become sour.

The Chemistry of Bread-Baking

During the baking, the yeast is killed and no further fermentation results; the alcohol and carbon-dioxide are driven out.

Gluten is the substance which expands and encloses the gas formed by fermentation. It makes the dough feel velvety and elastic when kneading. It is the lack of gluten in corn and rice which makes it impossible to produce a light, spongy loaf with flour made from these cereals. Glutinous flour is best for bread-making; starchy flour for pastry and cakes. Family flour contains enough gluten to make satisfactory bread and not too much to make good cake and pie.

Imperfections in Bread

Heaviness or sogginess is one of the most common and one of the most undesirable faults of bread. It may be caused by any of the following reasons:

By the use of flour in which the gluten is too weak to absorb all the water put into the dough.

By the use of too much water in proportion to the flour.

By an insufficiency of yeast.

By poor yeast.

By insufficient kneading, raising or baking.

Heavy bread is known to be very productive of digestive disturbance. When chewed it rolls itself into a solid lump and hinders the action of the saliva and the gastric juices.

A True Art

It is a far cry from the bread of the savage, made of flour ground from the bark of a tree, to the perfect loaf of today. And bread deserves the importance it is accorded. The first thing and the last thing in the home commissary should be good bread. There is no domestic art which equals the ability to make good bread and no domestic satisfaction so keen as that which comes from the baking of a perfect loaf. In the cities home baking is almost a lost art. Many rural housewives, in fact, now use the bakers' product, but if there is any place where home made bread is to be preserved as the great institution it really is, that place is in the rural home.

Woman's Land Army

The Woman's Land Army, now nationally organized, has been officially taken over by the U. S. Employment Service, and the members will be placed as emergency agricultural workers wherever their services can be economically employed. The organizers are gratified by this official recognition of their work last season, when more than 15,000 women aided in harvesting the crops of the nation.

Ether has other uses than in the operating room; one of them is for cleaning ribbons.

MOLINE GRAIN BINDER

Absolute dependability during rush of harvest season, plus service without delays or breakdowns makes Moline Grain Binders popular with every farmer who uses one. For over 50 years, Moline Grain Binders have been giving such service in all parts of the world.

Owners tell us without reservation or condition that Moline Grain Binders are positively dependable—that they are exceptionally light in draft, and that they do good clean work in all sorts and conditions of grain.

Moline Grain Binders give every owner the same dependable service.

There are sound reasons why they do—

Cutting apparatus is the heaviest and strongest made. Heavy guards do not bend or break when striking obstructions in a close cut.

All working parts are direct driven, the work is equally divided, no over strain on any part.

The knotter has few parts, is simple and easy to adjust—a sure tyer.

Triangular driving arm on binder attachment takes place of troublesome, power-wasting, complicated gears, shafts and sprockets.

Single lever controls the reel in all operations.

Main frame made of two pieces instead of four.

These are just a few of the many superior features of the Moline Grain Binder.

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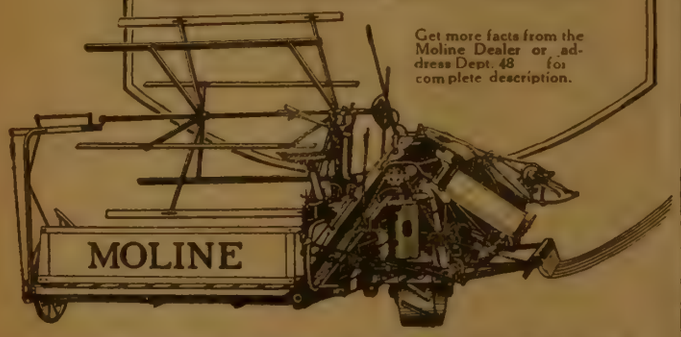

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What Is Lactein?

Lactein is a scientific condensed milk product for poultry and hogs. Made from pure buttermilk and whey, by our own process which retains all the health giving food values and a uniform acidity without the useless bulk of water.

Largest Poultry Farm in the World Recommends Lactein

Corless Bros., Mammoth Poultry Farm of thirty thousand laying hens and now making elaborate preparations for an additional twenty thousand more, and by far the largest poultry farm in the world, says:

"We have used Lactein and we are satisfied that it is a first-class article, a fine tonic and egg producer. For baby chicks we consider the feeding of Lactein indispensable. You may refer anybody to us and we will heartily recommend Lactein."

Swine Breeders' Association Recommends Lactein For Hogs

A resolution urging every resident in the county to "keep a pig" was adopted by the Stanislaus Duroc-Jersey Swine Breeders' Association yesterday afternoon. The action was taken in view of the appeal of the Government to increase the supply of hogs.

The association also declared itself as favoring the use of Lactein, manufactured by the Lactein Company, for the feeding of hogs. Several directors who stated they had used the Lactein for hog feeding highly recommend its use.—Modesto Herald.

LACTEIN is put up in wood barrels holding: five, ten, twenty-five and fifty-two gallons. Should your local feed dealer not have Lactein, write us direct and we will see that you are supplied without delay, or better still, send us $3.50 and we will ship you a five-gallon trial order by express prepaid. This, when diluted with water as per directions, makes 150 gallons of feeding solution, and is sufficient to acquaint you with the wonderful merits of Lactein. The price in fifty-two gallon barrels is 50 cents per gallon, or about 1½ cents a gallon when water necessary for feeding is added. Write for our booklet, "MAKING EVERY CHICK A CHICKEN."

Lactein Company
919 E Street, Modesto, California.

The Home Flower Garden

By Mrs. E. E. Paquette
1118 Polli Street, Ventura, Cal.

I WONDER if we shall ever forget the wonderful times we used to have in the merry month of May when we were school girls. I close my eyes and try to bring up memories of the different Mays of my childhood days and I find that the most vivid impressions were all gained from the same source—the flowers that surrounded us on every hand. I am sure I never learned anything from my studies in the month of May. I simply dreamed the hours away.

Let's take a trip on memory's ship, back to those happy days! For who can think of work and prosaic things with the "cheaters" croaking in the garden pool; with the children playing "yoles" down the street and the fishermen going by with their poles and baskets. And today I saw a purple martin. Yes, May is a month of song, and dreams—and flowers.

The Path of Dreams

How well I remember the road to school. It followed round a wooded hill and the trees came right down to our path. I always had a feeling that they bordered the path so closely because they wanted to be friendly and knew we did not have time to go up to them. And, oh, what wonderful trees they seemed! There was the dogwood, with its queer green color and its brown flowers; there was the wonderful flame of the redbud and the masses of creamy yellow, honey-sweet blossoms on the honey-locust.

And underneath the trees were patches of violets; sweet William, knee high, verbena, full of honey, and beautiful May apples. I shall never forget the wonderful sweetness of the flowers of May-apples.

Then after school, as the days lengthened, we would take advantage of the soft, warm evenings to go down to on the banks of the little lake, where the "red haws" were. And there we would gather armfuls of flowers. We looked for the water-lily pads and watched the red-wings build their nests in the rushes. How we hated to go to bed and what a waste of time it seemed to sleep!

That Wonderful Garden

After school hours, if we sat real close to the ends of our seats we could see through the window directly into Mrs. Witcher's garden. There were orderly steps that led up to Mrs. Witcher's garden and it was all "paled in." The very first Harrison yellow roses bloomed there. The paths were all laid out in straight rows and the beds were edged with turf. The very earliest radishes, lettuce and onions grew in that garden. In one corner was a gigantic lilac bush. In the center was a round bed. As soon as all danger of frost was over, she would put all the pot plants from the house into this bed. The geraniums were all around the edge. We could see the rose geraniums and verbenas—but just then our dreams would be abruptly ended as teacher closed the window-shutter and rapped sharply on the desk.

At noon we all took our lunches to the near by park where we would eat at the band stand and make crowns and wreaths. The weeds were always high along the river bank and there were many snakes.

A Saturday Excursion

All Saturdays were happy days but those of May seemed most wonderful of all. Perhaps Mother would send us over to Mrs. Harcom's for a setting of eggs. Mrs. Harcom's garden was a contrast to that of Mrs. Witcher—a wonderful jungle of weeds and neglected flowers and ornamentals. The front gate hung by one hinge and to the very edge of the back orchard there was a wonderful mass of plants. A honey-suckle sprawled over one corner and underneath the thick, leafy mulch were the most wonderful bleeding hearts. You "just knew" they were the hearts of lovely ladies who had died on their lovers' graves. Under the bedroom window was a matted mass of lilies of the valley, and no hothouse lily was ever so dear to me as those that grew by the hundred in that garden.

The back walk was overgrown with "bouncing bet" and "butter and eggs," with here and there some sweet Mary and flowering currants. Perhaps Mrs. Harcom would give us some roots or seeds. And before we knew it it was eleven o'clock and time to go home. Then Mrs. Harcom would take us through the kitchen where the table was always set. There seemed to be a dozen kinds of jellies and jams and a half dozen kinds of meat, and always there was a big plate of biscuits. Perhaps she would ask us to stay for dinner, and then, steeling our hearts and trying not to look at the table, we would say without any enthusiasm, as instructed, "No thank you, ma'm, Mama said to come right straight home." But she took pity on us and gave us fat sandwiches. Then with our setting of eggs and our roots or cuttings, away we would go.

Off to "Go Fishin'"

And there was father out by the well digging with a spade and putting something into a tin can. Our hearts fairly stood still for we knew he was going fishing. I hurried to do my share of the dusting and dish-washing, trying to show that I was not making any special effort to "be good," and fairly holding my breath until father said, "Sarah, have you anything for Ana to do, or can she go fishing with me?"

Strangely, I do not seem to remember ever starting on one of these trips. My first impression seems to have been gained at a point about a mile from home. I think I was so happy that I fairly flew and did not come down to earth until we had gone at least a mile.

We went through a field and stopped for a minute to inspect an old log cabin that stood back under a box elder. There was a black, "spooky" stairway that led to an attic. I was always sure there must be a "skeleton in the closet," or at least a wonderful Prince hidden up there. I rather believed in the latter theory; there was always a spider-web stretched across the stairway.

I am sure that there is no more beautiful place in all the world than the woods along the banks of Sugar Creek—in May. We simply waded through flowers and every tree seemed to be of a different shade of green. We would find the deep hole where the black bass hid, and although I tried to keep my mind on the "bob," my eyes would wander. Father liked to take me fishing with him because I was quiet. I wonder if he knew it was because I was under the enchanted spell of the May woods; deep in the dreams of happy girlhood; soothed by the scent of the flowers?

Hints for Vegetable Gardeners

Ashes for Fertilizer

THOSE who have been using open fireplaces or burning wood in stoves will make no mistake in saving the ashes for garden fertilizer. It is reported that the average composition of wood ashes derived from mixed hard and soft wood and produced in the household fires is about 5 per cent potash, 2½ per cent phosphoric acid and 35 per cent lime, equivalent to 70 per cent lime carbonate. However, the composition of ashes varies widely. It will range from 2½ to more than 10 per cent of potash, 1½ to 5 per cent of phosphoric acid and from 20 to 55 per cent of lime.

Causes of Variation

This variation may result from the kind of material from which the ash is derived. The small stems of trees and bushes, skins of fruits and other waste parts of fruits and plants are richest in potash. For this reason the ash from the household garbage is especially valuable. The ordinary commercial ashes on the market are generally much lower in analysis than the average given above. The purchase of ashes should always be based upon an actual analysis, if any large sum is involved.

Again, the composition of ashes depends upon the kind of fire from which it was produced. Intense and prolonged heat results in the loss of the fertilizer constituents, especially the potash. For this reason, ashes from kilns and furnaces are from one-third to one-half lower in fertilizer value than those from household fires and a larger proportion of the constituents is insoluble. A cord of ordinary mixed hard and soft wood will weigh approximately 3150 pounds and will produce in a large furnace about 20 pounds of ash. In a household fire it will produce from 30 to 40 pounds of ash. A bushel of ashes will weigh about 48 pounds.

Coal ashes have relatively little fertilizing value, but may be an advantage in certain soils; they are particularly useful to help break up a stiff clay.

Eat Vegetables

At least one-fifth of the diet should consist of vegetables, especially those that are fresh. A plot of ground thirty feet wide and fifty feet long, if properly handled, will produce the greater part of the fresh vegetables required by an average family. The back yard or home garden makes it possible to have the vegetables come to the kitchen perfectly fresh, and solves the transportation and marketing problems.

One of the strongest arguments in favor of the city home vegetable garden movement is that it provides the right kind of exercise and recreation for business people, whose life is spent largely indoors. A short time each day spent in the cultivation of a garden has a tendency to give the mind relaxation and the muscles healthful exercise.

A hoe and a rake cost less than a golf outfit, and a nine-hole garden course can be laid in any average city back yard.

Fighting Cabbage Worms

Apropos of the article in a recent issue on the control of cabbage worms, D. A. Stran, an Ajo (Ariz.) subscriber, points out the advantages of destroying the white butterflies that precede the worms. The daily use of a butterfly net in the garden (especially if neighbors co-operate) has proved, he says, to be an effective means of keeping down the worms, which not only attack cabbages, but other vegetables in the spring garden.

Trenching Vegetables

MY first experience with trenching to increase production was gained in planting flowers. I have since applied this principle with gratifying results to different vegetables.

For a row of tomatoes, for instance, dig a trench two feet deep by three feet wide by 20 feet long and fill it with alternate manure and dirt until nearly full. Then add leaf mould to the mixture used for the last six inches. The whole is then thoroughly soaked with water and left to settle for a few days. Then set the plants four feet apart. Plan for large plants with a great deal of fruit, and build strong trellises for them to grow on. One plant here actually grew fourteen feet high.

For peppers, instead of the trench, dig a pit three by three by three feet. Fill it the same as for tomatoes and set one plant to a pit. From one plant we gathered sixty fruits during a season. The branches will have to be braced to keep them from breaking off with the weight of the fruit. This plan works equally for squash, pumpkins and other plants usually grown in hills.

In the out-of-the-way corner which is difficult to irrigate or cultivate, plant a hill of cucumbers. To irrigate, take a five-gallon coal oil can and punch a small hole in one corner of the bottom. Fill with water and set on a stand at the hill, letting the water drip near the crown of the plants. One five gallon can of water a week is the allowance for each hill. I sometimes add a tablespoonful of nitrate of soda or sulphate of ammonia to the water. The amount of fruit produced by this method from a single hill is scarcely credible. Cucumbers do particularly well if chicken manure is used in filling the pits. The system is not recommended for peas, beans or root crops as the vegetative growth will be wastefully luxuriant.

Equal success will attend the use of this method for flowers, especially for sweet peas, morning glories and similar plants.—J. Henry Gysbers, Fairoaks, Cal.

Onion fields should be watched constantly and the plants should be kept growing thriftily, since once the plants become checked in their growth from any cause the thrips will multiply more rapidly than ever and it will be a hard fight to save the crop.

Expand the Garden

If you started a home garden last season, how about making it a permanent food producer?

A bed of asparagus is known to have given continuous service for more than thirty years, and asparagus is one of the first of the spring vegetables. A row of blackberries along a garden fence has produced abundant crops for twelve successive years. A few hills of rhubarb have provided delicious sauce and helped with the making of pies season after season, with very little cost or attention. Strawberries require more care, but they furnish the first ripe fruit in the springtime, and a very small plot of ground in one corner of the garden will supply the family.

Put into a home garden a little money, the knowledge gained from competent advice, and your spare time. Draw from it an insight into the workings of nature, healthful exercise and a reduction in your food bill. A home garden is a good thing to keep going year after year.

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"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.

Rheumatism

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

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Berkeley, Cal.

Extensive vs. Intensive Farming

(Continued From Page 5)

Business prosperity is made possible by successful farming. The haphazard, go-lucky methods of farming tolerated in the past will not carry on with the same degree of success in the future. Methods and principles which economize on time, eliminate waste and utilize raw material most efficiently must supplant the obsolete practices so long endured.

Crop production is the basis of prosperity in all farming lines. Cheap production of grain means cheaper beef, pork, milk, butter, eggs and poultry, produced at a greater profit.

The one great medium in decreasing cost in the production of grain is the increased yield per acre. This increased production can be brought about on moderate-sized farms, through scientific tillage, in such a way as to nearly, if not quite, reduce the production cost one-half.

Tillage, in its direct relation to increased crop production, is not understood by the average farmer today, for the simple reason that it is a very complex question and mistakes are easily made; consequently, one may start out to follow a progressive idea, overlook one vital part, and fail. His faith is weak; then up go his hands, and he says, "It can't be done."

There are really just six principles to be observed in applying scientific principles to the business of "dry" (or irrigated) grain farming. I have explained these in some detail in previous articles and in more detail in my book, which is now in the hands of many Orchard and Farm readers, and which is still being distributed by this magazine. (See offer in advertising columns of this issue.) Since, however, these principles are the basis of my system, I will list them briefly here:

(1) Preparation for plowing by loosening the soil at the surface early in the spring or just after the harvest in summer or fall. (Double disking immediately behind the harvester is one good method.)

(2) Thorough and early plowing, but not so deeply that the plowed ground cannot be packed.

(3) Immediate packing of the lower part of the plowed ground by means of a sub-surface packer, or disc harrow well weighed and set straight.

(4) The maintenance of a comparatively coarse mulch to a depth of two and one-half inches, and harrowing after each rain that is heavy enough to cause the formation of a crust; thorough tillage for a considerable time prior to seeding.

(5) The use of much less than the ordinary quantity of seed.

(6) In the case of cultivated crops, frequent and thorough cultivation.

The practical farmer will ask "right off the bat": "Will not the practice of such methods greatly increase the cost of production?" My answer is this: Good business is built upon the principle of spending money wisely. The wise grain grower spends possibly $2 an acre more on preparation, saves a dollar in seed grain and secures a yield that pays him frequently 500 per cent on his small extra investment. Is not that good business?

Note carefully the lower illustration on this page. This field contained 160 acres. The photograph was taken in a very good year when the crop averaged 41 bushels per acre, giving a total of 6560 bushels.

The upper photograph is of a field just across the road, photographed the same year. It averaged only nine bushels per acre, giving a total of 1440 bushels from 160 acres. The only causes of this wide difference lay in the time and manner of fitting the ground and the quantity of seed. The cost of fitting the low-yielding field was about $1 per acre less, while more than double the seed was sown on this field and 5120 bushels less grain harvested. In other words, it would require 729 acres yielding the same as the poor field to raise as much as the 160 acres of the good field. Do such results mean anything? Do they not point to the fact that science can do just as much for the farmer who is willing to see as it is doing for the manufacturer?

Does It Pay to Practice Scientific Tillage?

The field in which the upper photograph was taken averaged only nine bushels of grain per acre during a very favorable year. More than double the amount of seed was sown than in the field shown in the lower picture.

The seed for the lower field cost $1 per acre less and the yield averaged forty-one bushels per acre...The cost of preparing the land was slightly more, but on 160 acres 5120 bushels more grain was harvested. The two fields were separated only by a road.

Pulling Old Posts

For pulling obstinate fence posts, the wheel-type tractor is a "sure thing." Simply hitch a chain around the post a foot or so above the ground, fasten the other end to the wheel of the tractor (which is run up close beside the post), and back up. Something is sure to move and invariably it is the post. Usually posts can be pulled clear out of the ground in this manner without breaking them off, because if the chain is properly hitched, the first pull is upward and the final pull backward.

Citrus Problems.

(Continued from Page 4)

more extensive trial this season, include the soy bean and the velvet bean.

For the prevention of "June drop," however, it is imperative that the summer cover crop be planted early enough so that it forms a good green carpet by the time the trees are in bloom in April and for six weeks thereafter. This can hardly be accomplished by the use of any of the crops above mentioned except in seasons when, for some reason or other, blooming period is delayed. More satisfactory crops for this purpose seem to be buckwheat, which can be planted in March and makes a satisfactory growth by the time the trees come into bloom, Melilotus alba, and alfalfa, which may be planted either in the preceding fall or in very early spring. There seems to be no good reason why Melilotus indica, planted in January or February, should not also prove satisfactory for an early summer cover crop.

Cultural Requirements

In growing any summer cover crop, particularly one for the prevention of the June drop, a plentiful supply of water for both cover crop and trees is absolutely necessary. With buckwheat and various forms of beans and peas, this may mean half again as much as the trees require. With the others mentioned, it may mean two or three times the water requirements of the trees, depending largly upon the type of soil. The important thing, however, in planting a summer cover crop for the prevention of "June drop" is to plant it early and irrigate it often. Of course such a crop, turned under in July or August, also serves to build up the soil.

Red Spider Control

THE past season has been particularly favorable for red spider injury and the indications are that the coming season will show the necessity of vigorously fighting this pest. Beginning last spring, red spider infestation has occurred periodically right on through the winter and is now quite serious in certain sections. Some growers, in order to control this pest, have had to spray two and three times in a season.

Methods in Use

Opinions vary considerably regarding suitable methods of control, some preferring the dry sulphur, dusted on, while others favor spray with a weak solution of lime sulphur. It must be confessed that the latter seems to give more uniform and satisfactory results, although it is claimed by those who use the dry powder that spraying with the liquid is considerably more expensive. Certain it is that the dry article cannot be expected to prove effective unless applied properly. It must be not merely scattered on the outer surface of the tree, but actually blown well up into the branches from the under side, thoroughly coating each leaf on the lower side. Then, too, the use of the dry article is dependent largely upon weather conditions. For the best results, it should be applied early in the morning while the dew is still on the trees, and later in the day the temperature, in order to set free the sulphur fumes, should reach at least 75 or 80 degrees.

Thoroughness in application is as important in using the liquid as in applying the dry powder. One must be sure that the spray is directed from underneath and the foliage thoroughly saturated on the under side. A 3 per cent solution is ordinarily used. Many growers are beginning to believe that the important factor in controlling a pest as small as the red spider is not so much the amount of spray used as the pressure under which it is applied. At least 250 pounds is desirable.

80 truckloads of cabbage in your pants pocket—yes sir!

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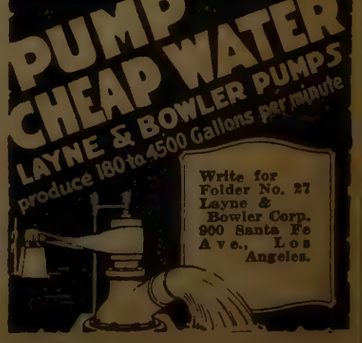

EDITORIAL DEPARTMENT OF ORCHARD AND FARM

~ TIMELY TOPICS AMONG FARM FOLK ~

J.C.Knollin, Editor

Our Editorial Policy

Farmers First

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things; looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

Uncle Wiseacre Says:

I know a feller thet has only two regrets. One is thet he has t' quit eatin' t' sleep an' th' other that he has t' quit sleeping' t' eat. His stomach is so much bigger than his eyes thet th' only beauty he kin see in a sunset is its resemblance t' a fried egg.

Some people is like a balky hoss. It's agin their nature to help. All they know is to pull back. A balky hoss generally has his way at th' time, but he never gits ahead very fast!

That fellow-being you passed with a cold, hard stare was jest waitin' fer yer smile t' break through t' agree with ye that it's a good old world, and to exchange news and views. Did ye ever stop an' think how easy it is t' get acquainted?

Half of th' heart trouble thet keeps doctors jumpin' is only gas-on-th'-stumick an' two-thirds of th' neuralgy is tooth-ache. More to think about fer idle men an' less t' think about fer busy men is far better tonics than Lydia Swamproot's Golden Discovery, er Dr. Bumkin's Vegetable Elixer, and not near so expensive.

Youth ain't no indication o' age. Th' biggest dude I know cried th' loudest about havin' his ears washed when he was a kid, an' the toughest feller in my neighborhood uster wear curls an' patent leather shoes t' Sunday school.

The farmer is the hub in the wheel of progress. If the hub fails, the spokes is useless, and th' rim ain't worth nothing. About two-thirds of th people in cities is runnin' on th' rim. Instead o' standin' around an' blamin' th' food producers fer all their troubles, they'd better put their shoulders to th' wheel an' make sure th' hub is in good runnin' order.

"We get a good laugh from a picture of a Hindu farmer usin' water-buffalo to pull modern American farm machinery. Yet we go right on hitchin' tractors to implements that was designed and made fer hosses. Th' Hindu's combination won't make much speed but it's likely to do better work!"

Creating a Market by Organized Effort

OVERPRODUCTION is not as often the cause of dull markets as the lack of buyers. The two factors may be entirely unrelated. That is why we frequently find farm produce selling below the cost of production when reliable statistics show a national or even an international shortage.

The reaction which has followed the stimulated, war-time production of many commodities is due in a number of cases to lack of development of possible markets, rather than to any real excess of supplies. Not that the present condition could have been foreseen. The farmers cannot be blamed for failure to create a market for products which they were officially urged to grow to the limit of their ability and for which they had every reason to expect a strong, sustained demand. Yet the lessons which we have learned by bitter experience from the war can be used to advantage now that conditions are returning to normal.

Organization and advertising are the best means of combating dull markets. Because produce does not sell readily is no reason for concluding that it cannot be made to sell. Scores of co-operative selling organizations have proved this point, and have by means of publicity, concerted advertising and the improvement of marketing facilities, expanded tremendously the demand for their products.

Increased production means more national wealth and better business conditions; let us not, simply because a reaction has set in, gloomily assert that there is no means of disposing of all that American farmers can raise; let us rather continue to produce as much as possible and in the meantime make sure that what we raise can be sold at a profit.

It is possible to do this by organized effort. It is actually possible not only to build up a market, but to create it. The bean growers saw little light until they joined together and sent a personal representative east to find buyers for their products. The sheep raisers did not wait for the stagnation of the dressed lamb market to become acute, but commenced recently a nation-wide Eat-More-Lamb campaign. Other industries can do much to help themselves.

The honey-business has in the past two years received tremendous stimulation due to publicity and the high prices arising from the sugar shortage. The danger of over-production has been so far offset by the education of the American people to eat more honey, and by the discovery of new and improved methods of using it. But prices continue high and interest continues strong, with the result that many new apiary enterprises are planned or are under way. If eventual disaster is to be avoided, the consumer must not be allowed to forget his war-time lessons. The time is ripe to launch an intensive campaign to popularize and increase the use of honey along the lines existing while the country was at war.

Oranges and lemons will probably never again rot in the orchards or be dumped upon eastern markets at ridiculous and ruinous prices; the citrus growers are handling their products in such a manner that their market is broadening more rapidly than the acreage of fruit is increasing. They have found, however, that not only must the growers popularize the use of their product, but they must also solve problems of distribution. From a consideration of such important phases of their business to the formation of a closer organization capable of improving also the purchasing and producing end of the industry was, in their case but a short step. Organization is the watchword of the hour and inseparable from organization are the principles, progress and profits of the producer.

Ben Believes in Leading a Balanced Life

"HO-HUM," yawned Ben Gonnadooit one very warm May morning as he rose from a pile of boards where he had been resting, prior to commencing a job of cultivating. "Here it is 10 o'clock and there's jest an even day's work on that north field. Guess I'd better let it go till tomorrow. I got a bum start this morning on account of gettin' so wore out last night an' sleepin' late. Of course, th' Jones weddin' had t' be pulled off last night of all nights jest when I wanted t' get up early an' start this cultivatin' job.

"A feller kain't keep up his social duties an' do jestice to farm work at one an' th' same time. An' now th' girls is plannin' a party for this comin' Friday an' I've got t' keep in shape fer that er I'll be so done up by Saturday thet I won't be able t' get over t' th' farm bureau meetin'. So I guess I'd better take it pretty easy th' rest of th' week.

"That farm bureau is a great instootion. Wish I hadn't missed th' last two meetin's, as th' boys said they got some good information on summer tillage, but modern country life is so derned complex it seems like a feller never ketches up with hisself. Oh, well, all we kin do is t' go along an' crowd as much work as possible into th' twenty-four hours. I don't believe, howsumever, in makin' life ALL work and NO recreation.

"Reckon I'll see how th' trout is bitin' this evenin' and relax a little so's I'll be in good shape t' finish th' cultivatin' tomorrow. It will be a hard day, an' they ain't nothin' t' be gained by OVERdoin'. A feller kin accomplish twicet as much ef he's fresh an' rested in th' mornin'. Kain't ye jest SMELL them trout cookin' fer supper? Ummmm! Nothin' like fishin' to rest th' nerves, an' nothin' like a fine fish dinner t' assure a good night's sleep!"

Private Experiments

PRIVATELY owned and operated experiment farms are a valuable adjunct to the State and Government stations. Unfettered by red tape, they are free to carry on their work along commercial lines and to take the shortest cut to desired results.

Without detracting in the least from the value of the work carried on by the official experiment stations, it may be said that the experiments conducted by individuals and business firms have figured very prominently in our agricultural development, and will probably always continue to do so.

The recent announcement, therefore, that a great California milling concern has acquired a 50 acre ranch in the San Joaquin Valley, where hog and poultry feeding problems will be studied, is of great interest to agriculturists of the State. This tract will be known as Sperry Experimental Farm No. 4, the same concern having already acquired more than 700 acres in San Joaquin and Butte counties for the study of wheat growing. Several thousand dollars is being expended in improvements, and important feeding investigations are to be commenced at once.

Weight or Measure?

Is it fair to sell eggs by the dozen? Even though there is sometimes a market difference of two cents a dozen between large and small eggs, it must be admitted that this does not cover the variation in weight. Scarcely any lots of eggs, even from the same poultry yard, will weigh exactly the same. Why not sell eggs by weight? It seems the more logical method.

And why should wood be sold by the cord? There is even a greater proportionate variation in weight than in the case of eggs. No doubt the time is coming when measurements will give way almost entirely to weight in the disposal of agricultural products.

Looking Ahead

"Eyes to the front" is one of the first commands that khaki-clad young America learned to respect. Lot's wife was turned to salt for looking backward. Most of the men of today who aren't worth their salt began by being too fresh and ended up by pondering upon their past mistakes. But don't confuse memory and remorse. To "live in the past" now and then is one of the dearest privileges of the human mind; to "dwell on the past," however, is one of its gravest mistakes. We can't cure a lie by telling a lie. Likewise, we can't make good a mistake by making another mistake. Don't make the mistake of looking backwards. This day and age typifies swift-changing progress. Commercial success now is being built upon positive rather than negative forces. The past cannot be "done over." The future is what we make it.

Capons Profitable

THE practice of caponizing brings about several great benefits to mankind:

Worthless and expensive cockerels are eliminated, with a saving of thousands of dollars to the State. Oregon estimates the loss entailed in keeping cockerels with the flocks at $650,000 annually. Less fertile eggs are marketed; there is greater return for the feed consumed; the flocks remain in better condition.

Millions of pounds of the best and most nutritious meat is added to the nation's larder, and peace and quiet reign in the poultry yard. The tendency is, then, for greater poultry production in the cities and consequently an increase in more ways than one in the nation's food supply.

Capons are in a class by themselves when it comes to raising chicks,

Typical Capons

Fattened and ready for market. While the usual marketing weight is from seven to ten pounds, it is not infrequently that birds are made to weigh from twelve to fifteen pounds.

for no chick can be lost, strayed or stolen when a capon is in charge of them. He can and will bring up the chicks while the hen returns to the business of laying. It has been demonstrated that a capon, because of his strength and vigor, quiet content and gentle manners, imparts more vitality to a brood than either a hen or a brooder.

How to Use Capon "Brooders"

Here is George Beuoy's method of handling capons which are to be used for raising chicks:

Place the capon in a small yard containing a coop and keep him there for a few days before giving him the chicks. As the coop has no perch, the bird will sit on the floor. When he has become accustomed to his quarters, take the chicks to him late in the evening and place them under his wings, talking to him in a soothing voice. Next morning, be up early to ascertain how he is acting. If he stands around on one foot, as though in doubt, and seems confused as to his duties, take the chicks all away and try again the next night. By the second morning the most obstinate capon will be clucking and ready to fight for the brood.—Mrs. H. Ament.

Avoiding Chicken Pests

I have found a way to get rid of the mites and lice which are the "bugaboo" of poultry raisers. I build my coops, brooders and houses of red cedar lumber. There seems to be enough oil or natural repellent in this wood to keep away the pests.

I secured the idea from the fact that the cedar chests used for household storage of clothing and linen successfully repel moths and other vermin.—W. H. Murdock, Anderson, Calif.

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By using Moline Side Delivery Rake you can rake your hay into long fluffy windrows where it will cure quickly and in best condition. It will also save your time in loading—we build two styles of side delivery rakes. No. 14 is a combined side delivery rake and tedder—simply shift a lever and it is instantly converted into a tedder. No. 12 is a side delivery rake only.

In addition we build a complete line of stackers, sweep rakes and mowers—all of which uphold the Moline reputation for quality, long life and convenience.

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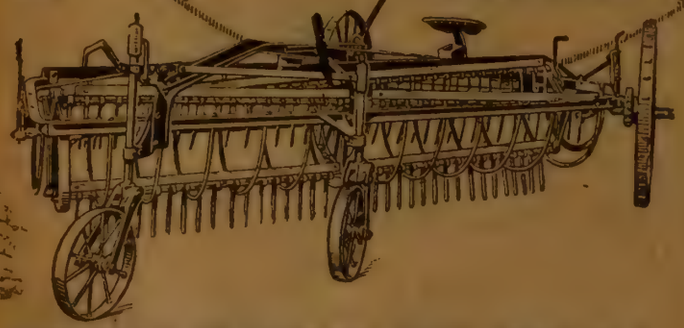

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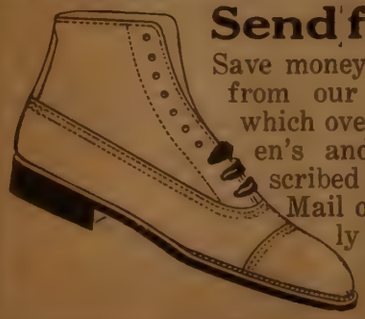

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A Farmer and His Poultry

This article does not deal with the methods of commercial poultrymen, but rather with the experiences of a rancher farmer who believes in making the most of his general purpose hens.

By Tulare Farmer.

THE farmer in a dairy section has one big advantage over the professional poultryman. He can buy skim milk and buttermilk for his hens very cheaply. I find that milk is one of the best feeds to increase egg production, and purchased in this way is as cheap a means of providing protein as can be found. The provision of protein feed represents one of the greatest problems of the poultry raiser; the dairy farmer or the one who has access to creamery waste solves this problem easily.

Frequently when I drive to town I bring back a can of buttermilk for my hens from the local creamery. For a while I fed it alone in troughs, but later mixed it with bran to make a bran mash. I found that when the mash was placed before the flock, together with gyp corn, they were ravenously hungry for the mash, but displayed only polite interest in the corn.

An Economical Feed

Buttermilk costs locally a cent a gallon in quantities for farm use, or approximately 8½ pounds for a cent. Nine-tenths of the milk is water and one-tenth solid matter. Therefore, the buyer gets 0.85 pound of solid matter for a cent; that is, 85 pounds of casein, albumen, milk sugar, fat and mineral matter of a kind necessary for fowls, for a dollar. Every particle of this material is digestible, and all of it is very valuable. This amounts to $23.50 per ton, plus cost of hauling. With bran costing $1.50 for 60 pounds or $50 per ton (a price which can be shaded somewhat by figuring in the value of the sacks and discounts for purchases of larger quantities), the bran is at least twice as expensive as the solid matter in the buttermilk, and present-day bran is rather a poor feed, while milk is good feed. Various kinds of poultry foods cost five cents a pound in sack lots, or $100 a ton, a price which can be reduced a little by purchasing larger quantities and considering the value of the sacks. Even that, however, would make their price four times as high as the digestible matter in buttermilk. Buttermilk, therefore, (or skim milk where it can be obtained) is not only about the finest food that can be secured for fowls, in limited quantities, but it is absurdly cheap. Of course, the amount that fowls can safely eat is limited. On this place they seem to like it better, and use far more of it, mixed with bran than they would ever eat when it was fed separately. Therefore, we have concluded that bran offers a profitable means of feeding the milk.

Free Range Beneficial

It can be said in connection with methods described here that liberties can be taken in feeding a farm flock of hens running loose and picking up all sorts of feed, that would not do at all on a regular poultry ranch where everything the fowls ate had to be bought for them. It is a rule on this place to see that the fowls always have as much to eat as they care to swallow and they always lay very well and never get too fat. This applies even to the heavy breeds. That is undoubtedly because they can run around all they want to.

This generous feeding seems to keep them from wanting to set; whether it is purely accidental or not, very few broody hens ever develop on this place, no matter what breeds are kept, and it is a mixed flock. Broodiness has developed in our flock as a rule when feeding has been cut down a little. Likewise, the number of eggs secured has proved that generous feeding is a very sensible system.

We are always careful to keep a constant supply of oyster shell before the hens and give them plenty of fresh water.

Grains for the Farm Flock

THE average farm flock receives for its grain ration whatever excess grain is on hand from the crops raised on the place. The relative value of the different grains is not always clearly understood. The use of a mixture of grains is generally conceded to be better than continued feeding of one kind. One of the most successful farm poultry fanciers in Southern California feeds a mixture made up as follows: Cracked corn 25 pounds; hulled barley (not rolled barley) 25 pounds; wheat 25 pounds; milo maize 20 pounds; sunflower seed 5 pounds. He finds that he can use even more barley than the above proportion with good results. In spite of the fact that barley is not generally regarded as a good chicken feed, his fowls seem to like the hulled barley almost as well as wheat, and they lay well on this grain mixture, supplemented with dry mash.

Wheat is considered the safest grain to be fed alone. It is not quite as fattening as corn, still is really too fattening when fed alone. This grain should be supplemented by some meat feed or skimmed milk to increase the proportion of protein. Wheat contains more protein than corn, about the same amount of carbohydrates, but less fat, and on the whole is considered not so valuable for fattening but better for growth.

Oats are often fed for variety, but are not well liked unless hulled, the hulls being tough and rather indigestible. Hulled oats, on the other hand, are relished by poultry and are excellent for producing eggs. When they can be obtained at a reasonable price in comparison with other grains they may be fed quite largely.

What Causes Laying From Roosts?

In reply to the inquiry of a Fresno reader as to what causes hens to lay eggs while on the roosts, C. J. Evans, U. S. Department of Agriculture poultry specialist, says:

It may be a habit caused by the nests at some time being unclean or infected by mites; sometimes it is due to fright which may cause the egg to be temporarily held in the body until she reaches the roost, or prematurely expelled.

It also may be due to a weakness of the muscles in the oviduct wall and perhaps hereditary. If this is true it will be likely to remain as a characteristic, and it would be better to cull from the flock such undesirable birds.

Sometimes the difficulty can be overcome by changing the pen and giving the birds only the floor for a roost, with some good, clean nests to lay in during the day and plenty of light so as to make a long day for the hen to work. Give them plenty of exercise and an abundance of green feed all the time.

A Practical Coop

T IS advisable to keep the hen with chicks confined for several days until all of her charges are rong and able to stand long grass-opper hunts through the wet grass. rovision should be made, however, r allowing the chicks to range about e coop.

The practical coop which is pre-nted in the accompanying illustra-on has a door covered with ½-inch ire netting. This door slides in ck of the slatted front when it is sired to close the coop, while it is shed back of the closed part of the ont when the coop is opened. Holes both ends of the coop, which are so covered with wire, supply addi-onal ventilation.

The middle slat in the door is read-y removable, sliding into a square

ire staple at the top and dropping to a half joint at the bottom. The ats are made of strips one inch uare. For ventilation purposes, cept when the weather is cold or ring cold nights, the long, narrow or at the front of the coop is kept en.

The coop is 30 inches long, 26½ ches high at the front, and 18 inches the rear. The floor is removable, d in every respect this coop, which a little more elaborate, perhaps, an the hen shelters many farmers w use, is practical for the confine-ent of the hens until the chicks are d enough to go to distant parts of e range under the chaperonage of eir mother.

Delicious Meat

If you have never eaten capon meat u have missed a rare delicacy. I eak from recent personal experi-ce, because one of our advertisers ently delivered to the office a sample the delicious fowls she is market-g. Although it was a heavy, mature rd, it cooked in less time than is ually required for a springer and e meat was of almost melting nderness. This one fowl made three eals for our family of three.

While roasting is recommended, we d no ice and feared that the warm eather would spoil our treat, so we rboiled the capon, after cutting up e meat, and then fried it as one oks a "spring fry." It had a delicate vor, unlike that of any other fowl e have ever eaten. When we con-der how many tough, old roosters e cooked every year, we wonder hy they are ever marketed. No ubt the time is coming when all mmercial poultrymen will capon-e, and if they haven't the feed, time, r equipment to fatten the birds emselves will sell them as "feeders" st as the stock raisers sell their in animals, to professional finishers ho will fatten them for market.

If you have never eaten capon, by means get acquainted with this licious meat. It will open your es to new gastronomic delights.—abel Sinclair.

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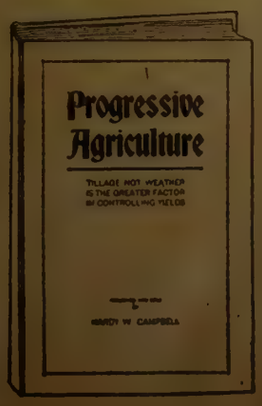

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Goats on a Desert Homestead

Five years ago no one would have dared to prophesy the present importance of the milch goat. There seems to be practically no limit, however, to the possibilities for development of the industry in the United States. Occasionally a new and interesting angle of the business is disclosed, such as this frank, personal story by a health and home-seeker.

By Edwin W. Pritchett

IT WAS in the fall of 1911 that my attention was first drawn to the possibilities of the milch goat. I was then living on a small ranch near Pomona and had always kept a fine Jersey cow, but that season she had not done very well and I was induced to sell her. We missed the milk and butter so much, however, that we regretted our decision. About this time my wife noticed a magazine article dealing with milch goats. I had observed that a neighbor had quite a number of goats picketed around his place and had often wondered why he kept them. I decided to discuss the subject with him. I had the prevailing idea that the milk was stronger or sweeter than cow's milk and that the goats gave only a small amount. I was willing, however, to be shown.

I was offered a glass of milk, which I found, to my surprise, was very similar to cow's milk, but much richer. My wife also sampled the milk and we were both converted.

Awakened Interest

The following day and succeeding days I thought of how good we had found that milk and resolved to obtain a goat at the first opportunity. I finally bought, for $52.50, three common does bred to a pure imported Toggenburg buck and due to kid in February. I sold two young heifers that I owned, as I didn't expect to have any further use for them.

The does brought me four doe kids. The following spring I purchased a pair of pure-bred Toggenburg kids for $150 and soon found myself with the nucleus of a herd. In the spring I found that, although the goats had furnished us with milk and butter, I still had hay on hand. Had I kept the heifers I would have had neither milk nor surplus feed.

I finally moved the goats to Long Beach and started a goat dairy. The milk was sold at 25 cents a quart, delivered with a motorcycle and side car. I found a good demand for my product, which, on account of its easy assimilation and freedom from tubercular germs, was used principally for invalids and babies. The common does yielded about two quarts of milk per day, but by the continued use of pure-bred Toggenburg bucks I soon had does that yielded between three and four quarts per day. Since it has been determined, according to the United States Department of Agriculture, eight goats can be fed on the same amount of feed required by one cow and will yield nearly twice as much milk, which is 50 per cent richer, it may easily be seen that my mature does were paying well.

Decides to Move

I found, then that I needed more room and range for the kids, and in the fall of 1916 I filed upon 160 acres of semi-desert land, 115 miles north of Los Angeles, in the Fremont Valley. This land is covered with several varieties of sagebrush, bunch grass and alfileria. The first winter here was very severe and eight to ten inches of snow covered the ground for ten days. Having lived in the vicinity of Los Angeles for fifteen years, I had not prepared for this, but as I had built a warm shed, the goats came through with nothing more serious than a severe loss of flesh. As the result of this exposure they did not do so well the following season. I profited by this experience and have since then laid in a supply of hay and grain for winter.

Desert Difficulties

I brought thirty-five goats up here and, although there are large numbers of coyotes, I have not lost one goat so far from that source. This may be due to the fact that I use bells on the goats. Rattlesnakes are also plentiful, and the first season several goats were bitten, but these were treated and recovered. Loco weed has given some trouble, but I have not yet lost an animal from any of these difficulties. Of course, there is no market for the milk here, but we sell stock and make butter and cheese from the surplus milk. We raise hogs on the whey and skimmed milk, supplemented with a little bran or barley.

My original intention was to use all the surplus milk for cheese-making. I dug a large cellar and fitted up shelves for curing the cheese, but the climate here proved to be too hot and we lost about 125 pounds of it. This cheese is in demand, and is worth $1 per pound, and our misfortune was, of course, very discouraging. We have not attempted to make any quantity since. Of course, by going to considerable expense I could have built a cooling house, but as my capital was limited I have never attempted it.

The goats are permitted to range at will, and as the range is almost unlimited they are sometimes gone

(Continued on Next Page)

The House the Goats Built
And four of the little animals that brought health and hope to Edwin Pritchett.

all day, but each evening at sundown the tinkling of bells is heard, and they all come trooping home. This homecoming characteristic cannot be fully appreciated by anyone who has never had to hunt for stock on the desert. On one occasion my horse wandered away and I walked fifty miles, carrying a saddle on my back, before I found her. On two occasions the goats, having roamed a little too far, were overtaken by darkness and did not return. I set out to seek them early the next day and met them on their way home, the milking does waddling because of pain from their distended udders.

What Was Accomplished

When I came here I was somewhat in debt and badly run down from overwork. There are four of us in the family. The goats have enabled me to stay at home practically all the time since I took up my residence on the homestead and the full time expires this spring. I have regained my health, am out of debt and can boast a new Ford and a modest bank account, all of which has been attained through my little herd of goats. I have now about twenty-five pure-bred and high-grade Toggenburg goats. None of my mature does yields less than three quarts of milk per day, while some of them will produce five quarts per day.

Prefers Grade Stock

My experience with pure-bred and grade goats has been that for utility purposes a high-grade is equal, if not superior, to the pure-bred animal; will produce as much milk and is, moreover, much hardier. I believe, however, in using nothing but pure-bred sires.

I think it must be conceded from the foregoing that the results obtained from this small number of goats and limited capital were very satisfactory and very promising for the new industry, especially when it is considered that this experiment was carried on during the duration of the great war.

Cutting the Family Food Bills

The milch goat helps to hold down the high cost of living for thousands of California families. Unlike the Little Lander, the back-yard farmer does not expect to make his entire living from a miniature tract of ground, but merely to help out his regular income. This scheme is very successful when carried out along the lines suggested by the writer of this article. She has tried it—and knows.

By Mrs. J. W. Jones

HOW can the busy housewife make a little extra "pin money?" The milch goat is answering this and many other perplexing questions for hundreds of city and suburban mothers who, although restricted by home duties and the care of small children, are desirous of stretching the family income. The back-yard farm, if the ambitious home-maker be situated in a city or suburb, offers great opportunities, not only for reducing the food bills, but for interesting the entire family in healthful, productive endeavor.

One of the most serious problems confronting the householder with a family of small children is the obtaining of a pure milk supply; especially is this true when infants are dependent upon artificial feeding. Here the milch goat is unequaled for proficiency and economy.

Most of the old prejudices against the goat are disappearing; it is one of the cleanest of animals and never displays the appetite for tin cans popularly accorded it by would-be humorists. The milch goat has come to stay and to enrich the community in which it is intelligently cared for. Especially does it offer hope to the family with very small means.

Consider, for instance, the man whose income is $60 a month and who has a small family to support. How can he afford, at the present high cost of milk and butter, to say nothing of other items such as meat, to be ignorant of the advantages of keeping a goat as a source of milk, butter and cheese supply for his family?

Let us size the matter up for a moment. Suppose that the family consists of two adults and two children. To get along on one quart of milk a day would be a difficult matter if the children were to have the kind of food they needed. Yet one quart of milk at 14 cents a quart would amount in 30 days to $4.20.

Two pounds of butter a week, which is the least amount that such a family should have, would cost, at 66 cents a pound in four weeks, $5.28. For milk and butter alone this family would then pay $9.48 a month.

True Economy Here

Is it any wonder that the demand for milk goats is increasing far beyond the available supply when a goat giving anywhere from two to six quarts of milk a day can be fed and cared for on a city lot for about $3 a month? It would be interesting for anyone who has never seriously looked into the question of keeping a goat or two to go about among his neighbors who do have them and to compare notes on the high cost of living. He would find the neighbor with the goats steadily increasing his bank account and planning to raise more goats so as to supply his neighbors with stock. It is possible to keep a goat in a

(Continued on Page 38)

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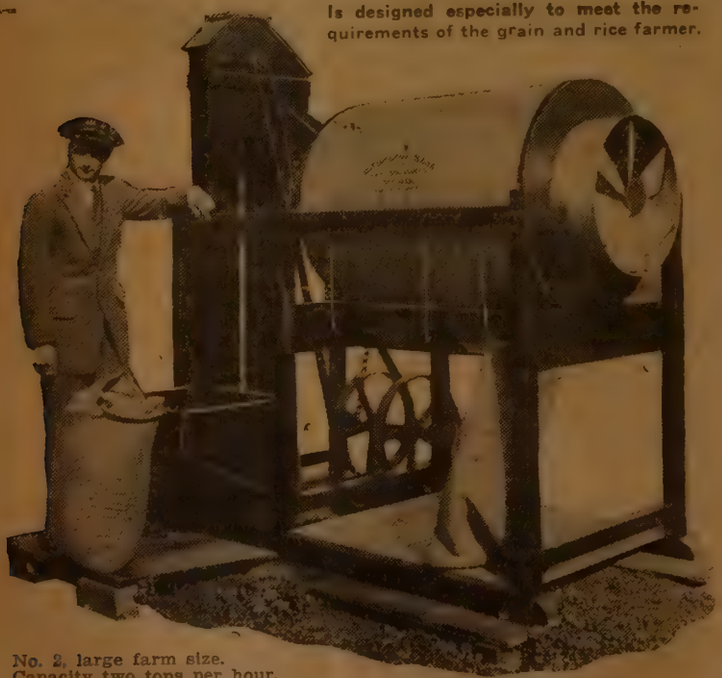

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Latest improvement in grain cleaner line.
It has a principle all its own.
A new invention that has no equal for selecting the best seed for planting.
Cleans Wheat, Barley, Oats, Rice and Kaffir Corn.
Cleans thoroughly and quickly; is simple in principle and durable in construction.
A 1-h. p. gasoline engine is all the power necessary to run it under full load.
Six of these cleaners will be in operation on six different grains at the Tractor Demonstration at Sacramento May 6th and 11th.

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Mountains, Mutton and Mohair

How a down-and-outer developed the idea that "got his goat" and what the goat did for him on his Southern California homestead. A true story of success.

By H. C. Davis

TWO million acres of goats! And why not?

In the southern half of California, alone, there are more than two million acres of idle land, most of which is suitable for goat-raising.

A few far-sighted persons, first called "visionary" and now referred to as "lucky," have already established very profitable goat ranches on this foothill and mountain land.

It is waste land, for the most part untillable. It is not, however, unproductive land. It grows a continuous crop of hardy, easily harvested, palatable, nutritious and ever-green feed. It is the land that has for generations been called "good for nothing." But our undiscerning ancestors, you will recall, even looked with suspicion and disparagement upon the dooryard ornamental called a "tomato," which they warned must by no means be eaten. It was considered, in fact, little better than a weed. Weeds and waste acres! Well, perhaps there are such things; but frequently the distinction depends upon the viewpoint.

Among those who converted his share of the two million acres into usefulness, was a man who was apparently "down and out." It developed that in reality he had only exchanged his Eastern experience for western wisdom. And among the things he gained were an idea and a homestead, one of those little openings in the brush-covered hills, pronounced by the natives "good for nothing but goats."

"I had learned the secret that has made failures in every business," recently confessed P. R. Danvers, one time of Chicago, out on his prosperous foothill farm. "And from that moment my slogan was, 'First find out!" Any business or idea may contain a potential gold mine, but unless you learn the tricks of the trade, the pot at the end of the rainbow is not for you.

Went to School First

"So, when I found myself thrown out into a world hard enough, but never cold in this climate," he loyally explained, "and possessed only of an idea, I took it with me and made my way to one of the old, well established Angora goat ranches of the northern part of the State. There I went to work as one of the 'hands' and proceeded thoroughly to investigate that idea of mine.

"The Conklin Brothers of Darling Valley Angora Ranch, at Newville, Cal., were generous in giving me every possible aid. They not only helped me by putting me to work at the practical handling of the band in the corrals and out on the range, but taught me the theory gained from their long practice. Also they gave me access to their books for a period of thirty years back, and there I learned many interesting things.

"Starting with a debt of $3000, and nothing else, they had in time added ranch after ranch to their original homestead, wholly by goat power, as M. L. Conklin often told me.

"At the time of my initiation, the most conservative estimate of their ranch interests would run into six figures. With many cattle and hogs included in their stock (and added, they declared, because of the improvement of the range which invariably results from the grazing of a well managed band of goats), they avowed that their first love still dwelt in the shining, silver-fleeced Angoras. And although their range limited them to a band of 1000 head, their books proved to me that from this source alone, and considering only mohair and mutton, exclusive of the sale of pure-bred stock, they were at that time receiving an income of $4000 a year.

"My experience on this goat ranch convinced me of three things: First, that the business is a sound one; second, that it has great possibilities in Southern California; and third, that I had been wise in learning the methods used on a successfully conducted goat ranch. There had been at that time little enough published on the subject, which is even yet the case, though the United States Department of Agriculture has recently issued a helpful bulletin.

Must Learn Essentials

"Mohair growing is really among the most simply conducted of all stock businesses, and its first principles can readily be grasped by the progressive farmer, who reads his agricultural journals for what he can learn from them. But, simple as they are, these foundation facts must be learned before success can be won. One of the best ways to learn the essentials is by starting on a small scale.

"I have proved by my own experience that the climate of the Southwest holds out many advantages for the raising of goats, and that ample range is to be found in the brush hills. For the four years since I brought down my little band, I have given them nothing except feed that they themselves have harvested from the native weeds and brush. They are fat and in good condition the year around, and the does average practically 100 per cent of kids each year.

"The Government bought my mohair last fall at 60 cents a pound, although a number of growers, who put theirs on the market independently before the Federal rulings went into effect, sold for as high as 85 cents. My grade does, sheared twice a year, average about five pounds of mohair each year besides producing a kid.

and my young wethers are beginning to make a better mohair showing than the does.

"Of course, the wethers are the real mohair producers of the band, and often continue assiduously transforming weeds and brush into the lustrous, silky fiber at the rate of an inch a month for some fifteen years or more, when not cut off in their early youth at 8 or 10 years of age to supply the public with 'spring lamb.' Seriously, it is a fact that until 2 or 3 years of age, the bones of the Angora do not harden and that they retain the pinkish tint regarded as an infallible proof of lamb in its innocent infancy. And Angora mutton is good, as I can prove to you at one of the dinners we often have, or as you can see for yourself at any high-class hotel in mid-winter when you order spring green peas and—Angora.

Good Blood Needed

"Good stock is, of course, one of the first factors essential for success. 'Blood tells' in the mohair industry. This is because common or mixed goats carry an under coat of 'kemp' or coarse white hair, which is difficult to separate from the mohair and which is ruinous in manufacture of goods because it will not take a dye.

"Equal importance, however, should be attached to the selection of the right location. That it can be on the cheapest and most easily available land in the State has been proved right here on my homestead, which was given away for the asking when I applied for it, because nobody else had wanted it. But, at that, you must have learned how to select the land with skill, as I had done. Many things, such as the height of the season for feed, the 'lay of the land' for winter protection and spring kidding time, accessibility of range, distance from neighbors, possibilities for expansion and provision of a summer camp must be carefully considered. Often an otherwise unpromising range could be made available by the purchase of a small ranch, probably wholly unprofitable as such, which gives the key to the situation.

"Unquestionably, the possession of at least a few tillable acres adds to the future possibilities of such an enterprise. Feed raised as an accessory to the range greatly increases the carrying capacity of the range. A heavy-yielding field crop, which can be made into hay or silage, adds many advantages. Where a band must be carried the year around on the same range, field crops guard against the hard season of drouth or the severe winters. Also, where a milch goat band is built up, as on my ranch, to be handled with the Angoras, crops to be fed out are of especial value."

Milch Goats Also

Mr. Danvers, after having given three years to the experiment of running milch goats with his Angoras, pronounces it a success. He sees in the plan many future advantages, both for the Angora grower and the goat man operating a city dairy.

"As was the case with a number of other things I have demonstrated," he states, with some amusement, "It was first proved to be that this could not be done. However, I find no difficulties in managing the combination herd. I have a small buck pasture, in which I keep the fine, young, pure-bred Toggenburg buck I have found it profitable to add as head of my little milch goat herd. He is one of the best bred animals in this part of the State, the only kind I can afford. This pasture is subdivided, and during the fall season the Angora bucks are also kept there. Milch does and Angoras range together with the young stock. I kill all milch goat buck kids at birth.

"I started out by taking a few dry milch goat nannies on pasture, keeping the kids as payment in many instances. I could tell you the story of one man who has climbed from poverty to a big business in less than five years by following this plan. Here lies an almost undeveloped branch of a big, coming industry for this country. But I won't go into that now.

Simple, Yet Complex

"The things I was warned I couldn't do, but did—the apparently insurmountable difficulties which I have overcome, should really be taken very seriously, for they represent the results of pitfalls, into which those who undertake to follow this business without the right preparation are very apt to fall most disastrously.

"As I said before, it really is a very simple business. As you see it now, with my band coming contentedly home of their own accord from the hills, where they have ranged all day without a herder, it appears deceptively so. It doesn't mean, you know, that any enthusiastic person can buy a band of goats and turn them cheerfully out, after duly admiring them, to find their living in the hills as best they can.

"Goats are by no means such peaceful rangers as sheep. Their first ambition at the dawn of day is to climb the highest hill in sight. But if you have provided for that by furnishing a hill you wish them to climb, instead of offering them only the forbidden heights of a neighbor's sacred preserves, then that quality can be turned to an advantage instead of a drawback. I have one neighbor, a mile and a quarter away, and another nearer, but I have no troubles because of trespassing. The secret lies in having learned how.

"One well-meaning rancher, in kindly trying to dissuade me from my 'hare-brained' scheme several years ago, showed me how disaster was sure to follow if I put Angoras on a brush range. He had tried it. He had found his goats dead on their backs all over the place, and in the spring, as though by a prearranged plan, all the does in unison deserted their kids, leaving the rearing of such as he could save to his best judgment and resources.

"It proved that he had turned the goats loose, expecting them to clear a large expanse of densely covered brush land, almost impenetrable for the most part by man or beast. In the first place, land cannot be cleared in this way, despite the popular belief that barren devastation promptly follows in the wake of the goat. And in the second place he had not the slightest understanding of the animal with which he dealt.

"Long, heavy matted hair is too heavy a burden for any animal to carry while it finds its way through an unfamiliar and almost impenetrable stand of stiff, entangling brush. Once down, under such circumstances, and weakened by exposure to bad weather and lack of the proper nourishment, it dies a discouraged death.

"It must be admitted, too, that does will neglect their kids under adverse circumstances. When lacking sufficient nourishment for themselves, they will even refuse to suckle their

(Continued on Page 41)

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Rumford Baking Pwdr.	1 lb.	can	.27	3.00
K. C. Baking Powder	25 oz.	can	.21	2.35
Del Monte Ketchup	1 pt.	bot.	.23	2.70
Postum Cereal	Reg.	pkg.	.20	2.30
Quaker Oats	2 lb.	pkg.	.13	1.52
Cream of Wheat		pkg.	.23	2.85
H. O. Oats		pkg.	.16	1.90
Grape-Nuts		pkg.	.12½	1.45
E. C. Corn Flakes		pkg.	.10	1.15
Kellogg's Corn Flakes		pkg.	.13	1.52
Quaker Puffed Rice		pkg.	.13	1.52
Quaker Puffed Wheat		pkg.	.13	1.52
Quaker Puffed Corn		pkg.	.13	1.52
Fancy Apricots	2½s	cans	.29	3.15
Fancy Peaches	2½s	cans	.32	3.75
Fancy Pears	2½s	cans	.32	3.75
Fancy White Asparagus	Lge.		...	3.25
Del Monte Asparagus	Lge.	white	.33	3.90
Del Monte Corn, Fancy			.23	2.65
Western Corn			.17	2.00
Del Monte Peas	2s		.18	2.10
String Beans, Std.	2s		.14	1.60
String Beans, Fancy	2s		.20	2.40
Tomatoes, solid pack	2½s		.18	2.10
Tomatoes, Standard	2½s		.15	1.80
Dunbars Shrimps	Small		.17	1.98
Dunbars Shrimps	Large		.32	3.75
Vermicelli	1 lb.	pkg.	.10	....
Salmon, Medium Red			.22½	2.75
Salmon, Pink			.18	2.10
Red Salmon	1 lb	can	.24	2.80
Oysters, Fancy	1s		.18	2.10
Oysters, Fancy Large	2s		.33	3.90
Tuna, white meat	½s		.20	2.35
Tuna, white meat	1s		.35	4.00
Raisins		pkg.	.13	1.52
Currants	1 lb.	pkg.	.32	3.75
Knox Gelatine	Reg	pkg.	.17	1.98
Jell-O, any flavor	Reg.	pkg.	.10	1.18
Lye	1s	can	.09	1.08
Chloride of Lime			.11	1.30

NAME	Size	Pack	Price Pkg.	Price Doz.
Coleman's Mustard	½s	pkg.	.47	5.60
Coleman's Mustard	1s	pkg.	.95	11.30
French prepared Mustard			.12	1.35
Toilet Paper, Rolls	7 oz.	pkg.	.09	1.05
Macaroni	per lb.	pkg.	.10	....
Crisco	1 lb.	can	.32	....
Olive Oil	Qts.	can	1.60	....
Olive Oil	Gals.	can	6.25	....
Cotton Seed Oil	Gals.		2.40	....
Beechnut Peanut Butter	Jar		.12½	1.45
Corn Starch, best	1 lb		.12	....
Gloss Starch, best	1 lb.		.12	....
Salt, Shaker	2 lbs.		.09	....
Campbell's Soups	Reg.	can	.11	1.30
Hominy, Canned	3s		.14	1.60
Del Monte Tom'to Sce.	8 oz.		.08	.95
Log Cabin Syrup	Small	tin	.28	....
Log Cabin Syrup	Medium	tin	.50	....
Karo Syrup, blue	1½s	can	.15	1.75
Karo Syrup, red	1½s	can	.18	2.10
Babbitt's Soap	Reg.	cake	.07	.82
Octagon Soap	Reg.	Cake	.08	.95
Lennox Soap	Reg.	cake	.05½	.65
Fels Naptha Soap	Reg.	cake	.07½	.88
Stryker's Sand Soap	Reg.	cake	.06	....
Sapolio	Reg.	cake	.08	.95
Bon Ami	Reg.	cake	.09	1.05
Lux Soap Chips		pkg.	.12	1.40
Ivory Soap	Small	cake	.07	.82
Palm Olive Soap	1	cake	.11	1.25
Sunny Monday Soap	1	cake	.08	.95
Crystal White Soap	1	cake	.06	.70
Tea, green	per lb.		.40	....
Lipton Tea	½ lb.	pkg.	.40	....
Old Dutch Cleanser			.08	.95
Babbitt's Cleanser			.07	.83
Octagon Cleanser			.07	.95
Matches, Safety			.12½	1.50
Prophylactic Tooth Brushes			.25	2.90
Pebeco Tooth Paste			.36	4.25
Bicycle Playing Cards			.25	2.90
Cough Drops, Pine Needle			.04	.45

NAME	Size	Pack	Price Pkg.	Price Doz.
Ghirardelli's Ground Chocolate	1 lb.	pkg.	.31	....
Ghirardelli's Ground Chocolate	3, 5 or 10 lb.	tins	.29 lb.	..
Ghirardelli's Breakfast Cocoa	1 lb.	pkg.	.37	....
Schepp's Shredded Cocoanut	1 lb.	pkg.	.35	4.00
Extra Quality Coffee, best ground or bean	1 lb.	pkg.	.30	....
Aunt Jemima's Pancake Flour. Regulth	2 lb.	pkg.	.14	1.62
Extracts, Pure Vanilla or Lemon	1 oz.	bot.	.11	1.30
Extracts, Pure Vanilla or Lemon	4 oz.	bot.	.35	3.90
Extracts, Pure Vanilla or Lemon	8 oz.	bot.	.60	7.10
Extracts, Pure Vanilla or Lemon	16 oz.	bot.	1.15	13.50
Lea & Perrins Worcestershire Sauce			.30	3.50
Arm & Hammer Baking Soda	1 lb.		.06	.85
Milk, Carnation, Alpine or Libby's		Large	.13	1.55
Milk, Carnation, Alpine or Libby's		Small	.07	.75
Procter & Gamble's Naptha Soap		Reg.	.06	.95
Twenty Mule Team Borax Soap		Reg. cake	.07	.83
Cane Sugar, in 48 or 100-lb. sack		Per lb.	.096	..

Delivery costs you as much on FIVE dollars' worth as it does on TEN, therefore, the larger amount YOU order, the more money YOU save.

Send your order now accompanied by bank check, postoffice money order or express money order. If you send currency, you must register the letter, or we are not responsible for same.

Write shipping instructions, your needs, name and address plainly. Prices guaranteed for 10 days. We issue NO catalogs.

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Any Bank in San Francisco

Cut out this advertisement and hang it in your kitchen.

POSTAL STORES INCORPORATED

W. C. PRICE & CO.

Established Over 40 Years in San Francisco

GRAIN, DRIED FRUIT AND GENERAL PRODUCE COMMISSION MERCHANTS

We want your shipments of produce in Hay, Grain, Potatoes, Cheese, Butter, Eggs, Poultry, Dressed Turkeys, Flour, Wool, Beans, Comb and Extracted Honey, Broom Corn, Hides, Green and Dried Fruits, Nuts, Oranges, Lemons and Vegetables.

244-246 CLAY STREET, SAN FRANCISCO, CAL.

CONSIGNMENTS AND CORRESPONDENCE SOLICITED

REFERENCES: The Anglo-London Paris National Bank of San Francisco; The Bank of Italy, San Francisco.

All kinds of produce bought outright or handled on commission.

PAID UP CAPITAL STOCK, $50,000

Poultry prices higher than ever before. Old hens bringing as high as 45c per pound. Ship all the poultry you possible can.

In writing, mention Orchard and Farm.

$673.70 FROM HALF ACRE RHUBARB

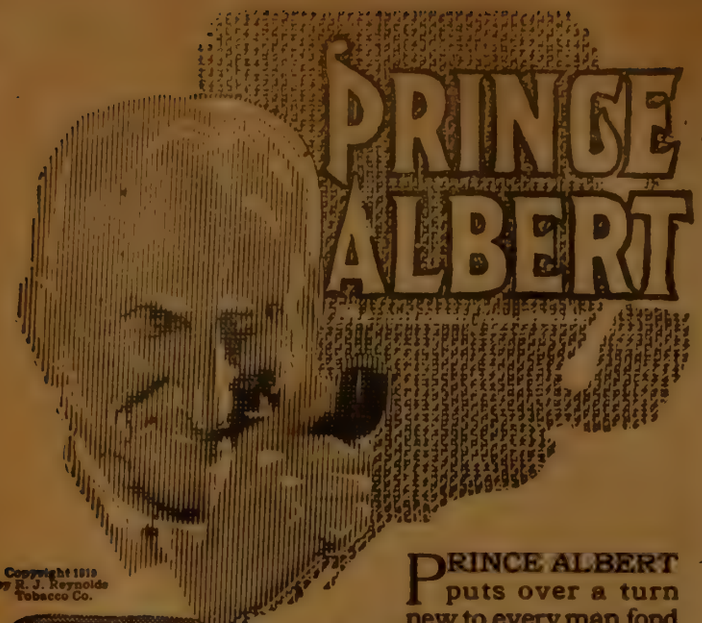
(675 boxes) first season after planting. Last season I averaged $1.15 per box; to March 27 this season, $2.07. By planting this spring or summer you should get 500 boxes per acre during high prices next winter and at least as much more for the later spring market. A perennial crop. Limited number plants for sale. Illustrated Circular Free.

W. A. LEE, COVINA, CALIFORNIA

"Golden Eagle Poultry Foods"

Prepared with exceptional care from choicest mill feeds, seeds, grains, etc. Rich in protein. The poultryman's best investment. Write for samples and prices.

Golden Eagle Milling Co., Petaluma, California



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PRINCE ALBERT puts over a turn new to every man fond of a tobacco smoke—whether it's through a jimmy pipe or via a home made cigarette! P. A. is such a revelation it wins your friendship completely, giving you a brand of satisfaction and keen enjoyment that never before has been yours.

Tell you the truth, Prince Albert will make such a hit with your taste and your tongue, you'll wish you had been born twins so you could smoke just about twice as much! And, all this delight P. A. hands out can be credited to its quality.

And, right behind this quality flavor and quality fragrance is Prince Albert's freedom from bite and parch which is cut out by our exclusive patented process. We tell you to smoke your fill at any clip—jimmy pipe or makin's cigarette—without a comeback! Does that sound like the goods to you?

Buy Prince Albert everywhere tobacco is sold. Toppy red bags, tidy red tins, handsome pound and half pound tin humidors—and —that clever, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

Send 6c Today For Our Big Plan Book

Then you have before you a large number of modern, convenient homes—complete plans. Remember that we cut the lumber to fit, and ship it to you ready to erect. Each piece is plainly marked corresponding with plan and complete material list which tells what each piece is, and where it goes. You can put it up yourself.

Our Ready-Cut home, direct from the factory to you, saves labor, saves money, and we guarantee satisfaction.

Send 6c today for our Plan Book.

Fenner Manufacturing Company.
306 Ship St., Portland, Ore.

GOLDEN GATE WEED CUTTER

Kills the Weeds and Cultivates the Soil.

Greatest weed killer on the market. Cuts them off clean, under the surface, close down to the roots. Besides, it breaks up the ground so thoroughly that one user says he saved $200 in a single season, because after cutting the weeds he did not have to plow. Cuts seven feet or less. Weighs but 280 pounds. Cut adjustable to any depth. Constructed of steel throughout. No other implement like it.

WRITE FOR CIRCULAR which illustrates and describes the Sigurd Weed Cutter and contains letters from many users.

C. G. SIGURD, Manufacturer
Capital Ave. and McKee Road, San Jose, Cal.

Cutting the Family Food Bills

(Continued From Page 35)

space of 10 or 12 square feet if opportunity for more exercise is provided.

"Goating and Gardening"

The home garden and the goat belong together. Everything from the garden which the family does not consume, the goat will relish and turn into "milk that is all cream" (as one woman who hopes to own a goat has aptly put it.).

One or two rabbit does should be kept also to eat up every scrap of food the goat leaves. In that way the rabbit-feed costs absolutely nothing and they will, if handled intelligently, supply a considerable portion of the meat supply.

Of course, in the well regulated back yard "farm," a pen of 10 Hoganized purebred hens is kept and they pick up any grain dropped from the rabbit hutches. Ten such hens should supply the family the year 'round, especially if excess eggs are put down in preservative during the fall months.

The family which has a home garden, a goat or two (two do better than one as they like company) and keeps rabbits and chickens, is prospering no matter how small the income!

Care of Family Milch Goat

The care of goats is a very simple matter. They require clean, dry quarters and clean food, which may consist of rolled barley, bran, alfalfa hay and beet pulp. A piece of rock salt should be wired at some convenient place in the goat house.

Plenty of pure, fresh water is essential and green stuff from the garden with prunings from trees provides an ideal additional food supply. Goats will not touch food which has become the least soiled nor hay that has fallen on the ground; therefore, the provision of proper feeding facilities is very important.

The kids sell at birth for from $5 for the commonest to $100 and more for purebreds. Purebred buck kids are also very valuable. It hardly pays to raise the grade buck kids for meat where only one or two milk goats are kept, as they consume so much of the milk, but the kid meat, especially at about six weeks of age, is delicious. A family can use every scrap of the meat by drying and canning all that is not used fresh.

Ways to Use Goat Meat

MEAT ROLLS—Roast meat until thoroughly cooked; then cut it up in a meat grinder and mix with butter only (unsalted goat butter). Shape it into rolls about the length and thickness of a clothes pin. Then dry these rolls in a slow oven until a delicate brown.

These, if properly made and stored in a cool dry place, will keep a year or two, according to a member of the American Milk Goat Association.

Another way to preserve kid meat is to make "Mexican jerkey." Cut strips about an inch in diameter. Place in a strong brine over night. Next morning hang on the line in the open air and cover with cheesecloth to keep off insects. It will dry thoroughly in from 2 to 4 weeks. Then it should be placed in an unwashed flour sack to prevent mold and hung in a cool, dry place. Roast "jerkey" is considered excellent by those who have tried it.

Cheese Making From Goat Milk

A bottle of rennet tablets for cheese (not junket) can be obtained from any drug store. For eight pounds of goat milk use a little more rennet than the recipe which comes with the tablets, calls for, and leave it a full hour to "set." Then cut the curds and warm to 98 degrees, no higher (use thermometer) stirring gently every few minutes. Cover and set aside for another hour. Then drain in a sieve lined with cloth and pack into a mould, salting and pressing it down all the time. Put a weight on top and set aside for 24 hours. Then take the cheese from the mould and set on a screen tray in the open air with a folded cloth under it and another over it to keep free from dust. Turn every day (changing cloths each time) for 10 or 12 days at which time it will be ready to be coated with melted paraffin and stored for future use. It can be eaten at once but is far better after 5 or 6 months' time. If the cheese molds on the outside during the process of curing, wipe it off with a little vinegar.

Butter from Goat Milk

At milking time strain the milk into shallow pans and set in a cool place. Next day, heat the milk in the same pan (taking care not to stir it about) until a wrinkled scum appears. This heating must be very slow and the milk must not reach the scalding point. The process should take slightly less than fifteen minutes. Then carefully set the pans in a cool place until the next day. The cream can then be easily removed and about three times as much butter from the same amount of cream can be made as could be churned from goat milk used in the way cow's milk is handled.

There are small, patent hand churns especially adapted to churning goats' milk.

Great Show Activity

An excellent opportunity for showing will be afforded the goat breeder on the 24th of May when the Pasadena Goat Association holds its annual show. There will be cash prizes offered, and many of the finest goats in the country will be exhibited. Information in regard to the show can be had from Mr. Elmer E. McInturff, secretary of the association, Lamanda Park, Cal.

About the middle of June the Los Angeles Goat Association will hold a show, the location for which is now being selected by a committee with power to act.

Milch Goats Tested

A milk test is now being conducted in all Southern California. The fifteen goats holding the highest milk record will be judged in a class by themselves to compete for the grand championship prize in the Los Angeles Goat Show.

Breeders are watching with interest to see how "Vonda," grand champion grade doe at the Liberty Fair, will hold up under this test. This splendid Toggenburg doe, bred by Mrs. L. O. Rhoades and now owned by Mrs. Joseph Park, gave 1987 pounds of milk in a little less than 10 months' time in spite of having been moved about from place to place several times during this period. Remarkable milking records are continuously being made with goats.

Hogs as Profit-Makers

A prominent stockman recently said that if he had $50 which he wished to double in the shortest space of time, he would put it into brood sows. One year ago Fred Wilson of the Creighton District in the Salt River Valley (Arizona) obtained a pure-bred registered Duroc Jersey sow, raised her to maturity and had her bred to a registered boar of the same breed. She produced a litter of seven pigs—five sows and two boars. Three sows were sold and shipped to northern Arizona for $45. One sow sold in the district to a boy for $10, leaving one sow on the place in addition to the mother. The two can be taken care of by means of the waste products on the 40-acre farm. The two boars were sold for $10 apiece.

According to Hoover, hogs farrowed this fall are not at all likely to be worth less than present prices when fat.—William Schneider.

Sunflowers

The Game of Life

Are, High

"A boy," the nurse announced, and then,
The happy millionaire
Sat down and with his gold-trimmed pen
Wrote out for son and heir
A check for fifty thousand, cool,
To start him off in life—
And planned where Boy should go to school,
And kissed his pretty wife.

A Pair

"It's twins," the smiling nurse did cry
To Smith, the office clerk.
And with a proud light in his eye,
He hurried off to work.
He did not dare to miss a day;
His salary was small,
And now there were new bills to pay,
And he would need it all

Three of a Kind

"Triplets" was the message that
They brought to Jimmy Jones.
With dazed delight he took his hat,
And dragged his weary bones
Unto the dusty yard where he
Was wont to shovel coal—
Not caring what the cost would be
Because he had no roll.

A Full House

And Tony Tripe, the section hand,
Whose assets were nil plus,
Sang and danced to beat the band,
And made an awful fuss,
When "Quadruplets" was whispered from
The softly opened door.
And now I guess my story's done;
I can't say any more.

—Justin Nutt.

Sport Talk

Sam Dusky: "Looky yeah yu fellers, I got fo' bits dat sez Jack Jonsing could come back t'day an' lick any white hope dat was willin' t' stan' up befoah him."

D'ark Kloude: "G'long wid yo' loud talk, niggah. Jack Jonsing got about as much chance t' come back as a cannon-ball fahed into de ocean six hundred mile f'm shoah. Dat's about how much chanct he got! Jack is a back numbah, dat's what he is. He'd have about as much show t' win as de blackest sebenth son ob de blackest sebenth son, playin' agin loaded dice on Friday de thirteenth after a black cat done crossed his path. Dat's how much chance he got. Niggah, yo' bettah gib me yo' money fo' safe-keepin' ef yo' kaint display no more jedgement n' dat in see-lectin' yo' investments!"

The Green Hand

His Employer: "Did you salt the sheep before you came in, as I told you to?"

"Yes, sir; that is I sprinkled most of them pretty thoroughly and rubbed it into their wool, but I couldn't catch all of the lambs, so I'll have to finish in the morning."

Call on Dad

"And do you think that the army training will be of permanent help, to the boys, now that they have returned to civil life?"

"Judging from the bills that I'm getting, about the only command my son remembers now is, "Charge!"

Show Me Facts!

BEFORE you buy *any* tractor you have every right to say to the manufacturer: "Show me what the USERS of your tractor have to say. *Show me* that it has already proved itself economical and practical in every-day work. *Show me* the *figures* your *users* have given you so that I may figure costs and so determine why I should own one of your tractors."

Here, then, is part of one of the large number of letters constantly received from farmers telling us what their *Cleveland Tractors* do for them.

To begin with, I used my Cleveland Tractor to plow about 305 acres during 1918 and used double discs, two 60 tooth harrows and a heavy wooden drag on one load for fitting.

When I plowed I covered from eight to ten acres a day with a two-bottom gang and covered about 40 acres a day with the harrows.

I harvested 150 acres of wheat and oats at 25 acres per day.

In July I used the Cleveland in loading hay, and got in the crop from 140 acres at the rate of about 35 tons a day.

Besides these things, I used my Cleveland for a great many belt jobs—put in 300 tons of ensilage in 32 hours, on 30 gallons of kerosene, for instance.

I now keep six horses, instead of the fourteen I had before and need two men less than previously.

My Cleveland is in excellent condition, ready for the 1919 season, and counting everything, I haven't spent over $10 for repairs.

F. H. JOHNSON,
New Augusta, Indiana.

Such specific, definite facts tell why the Cleveland is so fully justifying the faith that so many farmers have placed in this compact, powerful Tractor. Write *today* for complete information and the name of your nearest Cleveland dealer.

"The Cleveland is the ideal tractor for Pacific Coast conditions. Be sure to see it in operation at Sacramento."

The Cleveland Tractor Co.

19081 Euclid Ave. **Cleveland, Ohio**

The largest producers of track-laying tractors in the world

Cleveland Tractor

"The Story of The Cleveland Tractor Co." Illustrated, Free

Send Name and Address to

SMITH BROTHERS, Distributors

1624 SOUTH FIGUEROA STREET, LOS ANGELES

Canadian National Railways

Own a "SELECTED" Farm In Western Canada

—Make Bigger Profits!

The most Wonderful opportunity in the world for Business Farmers is in the "SELECTED" Farms, which can be bought for $15 to $40 an acre along the lines of the Canadian National Railways in Western Canada.

"SELECTED" Farms

These "SELECTED" Farms are carefully chosen from the cream of the richest wheat and cattle country in America, to meet your special needs, by experts representing 14,000 miles of railway, whose advice, while free to settlers, is of great practical value.

A Cordial Welcome

Western Canada extends a helpful hand to home seekers. Friendly neighbors—splendid schools, churches and social life—every benefit that you formerly enjoyed—await you in this wonderfully prosperous "LAST WEST."

Big Profits In Wheat, Beef and Dairy Cattle

"SELECTED" Farms average more than 20 bushels of wheat per acre. Under specially favorable conditions a yield of 50 to 60 bushels per acre is not uncommon.

Beef and dairy cattle yield great profits. Stock thrive on the prairie grasses, which in many sections cure standing and make fine hay. Cattle and horses require only natural shelter most of the winter and bring high prices without grain feeding.

Low Taxes—Easy Terms

There is a small tax on the land, but buildings, improvements, animals, machinery and personal property are all tax exempt. Terms on "SELECTED" Farms: About 10 per cent cash down, balance in equal payments over a term of years; interest usually 6 per cent.

Special Rates to Home Seekers

Special railway rates will be made for homeseekers and their effects to encourage personal inspection of the "SELECTED" Farms along the lines of the Canadian National Railways. Full information will be sent free on request. WRITE OR MAIL COUPON TODAY!

DEWITT FOSTER, Superintendent Resources
Canadian National Railways
Dept. 4185 Marquette Bldg., Chicago

Please send me free and without obligation to me, complete information on the items concerning Western Canada checked below.

[ ] Opportunities for big profits in wheat
[ ] Big money-making from stock raising
[ ] Special Railway Rates for Home Seekers
[ ] Business and Industrial Opportunities

Name .....
Address ..... R. F. D. .....
Town ..... State .....

Steel Mantle Burner

One Steel Mantle Burner Gives as Much Light as Three Common Burners.

REASON:
It converts Kerosene Oil into Gas and BURNS the Gas.

ECONOMICAL
Gives the MOST light per gallon of oil used.

RESULT
Transforms Old, Smoky, Dingy, Weak Lamps into Bright, Clear, Odorless, Powerful, Smokeless Lights.

Equip your lamps and lanterns with Steel Mantle Burners—the perfect light givers. One Burner mailed free and postpaid any place in the United States with one year's subscription at 50 cents or three years at $1.00.

ORCHARD AND FARM Los Angeles, California

BAGS For All Purposes

New and second-hand. Every bag thoroughly inspected before shipping. Bags for grain, potatoes, seeds, rice, onions, beans, etc. Whether buying or selling, communicate with us.

Speyer Bag Co.
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SEEDS

Ask for Our 1919 Catalogue.
AGGELER & MUSSER SEED COMPANY,
620 South Spring Street.
Phone, Main 4545. Los Angeles, Cal.

Stage Set for Big Tractor Show

"EDUCATION" is the keynote of the great Sacramento tractor demonstration, to be held May 6 to 11, according to Manager R. M. O'Neill, who is completing arrangements for the big show. Mr. O'Neill, it will be remembered, very ably managed the last two demonstrations of the Traction Engine and Implement Dealers' Association of Southern California, the California Tractor and Implement Association, which is giving the present demonstration, and the Southern Association having employed him as joint manager.

In connection with the Sacramento show, Mr. O'Neill is emphasizing the interest of the farm woman in the use of power on the ranch. It is pointed out that a tractor on the farm means to the wife of its owner less drudgery, fewer men to cook for, shorter hours, less household care, and more freedom and relaxation from her arduous duties. A large attendance of women is anticipated.

There will be much of interest to them, as well as to the men, in the accessory exhibits, which will include a large number of power machines of various kinds. There will be complete exhibits of farm implements, and the farm truck show will be especially strong, much interest being manifested this year in this important member of the automotive "tribe."

Tractors will make field demonstrations daily, doing all the different work that farmers require of their iron steeds, and offering the visitors an opportunity to make comparisons.

A large attendance is assured at the daily lectures on tillage, farm machinery, soils and other branches of agriculture, which will be given by a corps of experts.

The admission will be free, and the accommodations will include auto parking space and camping grounds. Special rates, amounting to a fare and one-half for the round trip, have been arranged by the Sacramento Northern and the O., A. & E. railways.

Without doubt every agriculturist in California is interested in power farming. Many puzzled prospective owners have been unable to decide what machine to buy. For such men to attend the Sacramento demonstration is merely a matter of good business judgment, for upon making the proper selection may depend entirely the results secured. There will be a great many good tractors on exhibition, and one of these may be the one especially suited to pocketbook and special conditions.

THE PRIZE CONTEST WINNERS

Cannot be announced in this issue, owing to the large number of contributions that were received during the last few days of the contest.

A number of these are published in this issue of Orchard and Farm. The entire list has been prepared for the consideration of the judges, and we hope that they will complete their work in time to announce the names of the winners in the June number. In case they do not, the checks will be mailed to the winners, when selected, and their names published at the earliest opportunity. So many more contributions were received than we anticipated that it has been a difficult matter to handle them all at the last minute.

The contest was a success from every angle and, as a result of it, we have secured much valuable material for our columns. We wish to thank the subscribers, who have responded so splendidly, and to ask all to have patience until we can publish the results.—The Editor.

Stacking Hay

(Continued from Page 20)

more than the other members of the crew.

Through long experience the foreman of Cool Shadow is able to start each boat hauling from a certain part of the field in such a manner that they will arrive at the stack in regular succession. As one boat is unloaded, another is approaching the stack, a third is about loaded and the fourth is reaching the field, empty. They are kept moving in this manner all day. If one loses time, the driver is sent for a time to a section closer in, until the regular order is again established.

Observation of this method of haying in operation leads to the conclusion that more hay can be handled in less time than by any other system and that a product of very good quality can be obtained.

Whether the extreme dryness of that region led the ranchers facetiously to refer to their hayracks as "boats," I am not prepared to say. That there is some basis for this conclusion, however, is indicated by the parting remark of the foreman:

"So far as dampness is concerned, the boys sort o' have to dwell on memories, you know, and they seem to reconcile themselves by indirect allusions. Lately they've even been referrin' to buttermilk as 'cream-de-mint' and blowin' the foam off their coffee. Yes, sir, times sure do change! But th' fact is, they're better hay hands than they used to be, and winie our system always worked fine, it seems like we make lots better time than we did before the—er—drouth."

Tractor Talk

(Continued from Page 9)

and study, however, is to risk disappointment and loss."

"But how," I interrupted, "is the farmer to decide on a tractor?"

"The best place to get first-hand information is at tractor demonstrations. Public demonstrations offer the greatest opportunity to the prospective buyer to make a selection which shall fulfill his requirements. The 'live wire' farmers may usually be found at these demonstrations."

That there will be many changes and great improvement in tractor design nobody can deny, but why wait for possible developments? This was the trend of his argument. It is by the expansion of an industry, he pointed out, that the incentive for investigation, experiment and improvement is created. Had we waited for the perfection of the steam engine before adopting it for propulsion on land and water, we would not have progressed very far in that direction.

This does not mean, however, that it is the land owner's duty to risk large sums of money in the carrying on of experiments for the benefit of mankind. For tractors are far beyond the initial experimental stage. When you see a tractor at work in the fields of a farm you are passing, you instinctively think, "There is a progressive rancher." And he is, in fact, progressive in two senses of the word. He is using up-to-date methods in his business, and is at the same time contributing to the general development of agriculture. Now is the time to consider power needs, and now is the time to satisfy them.

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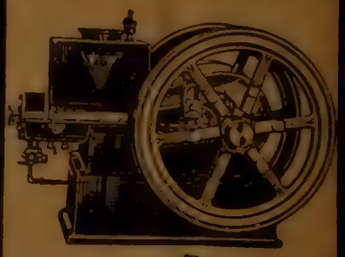

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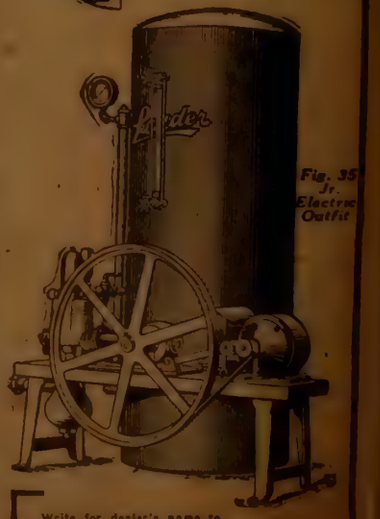

Fig. 35 Jr. Electric Outfit

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Distributors Leader Water Systems, Fuller & Johnson Farm Engines, Star Windmills,
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Mountains; Mohair

(Continued From Page 37)

offspring. When they are on the range, their herd instinct is stronger than the responsibility of motherhood. They are quite conscienceless when it comes to deserting a kid too small to keep up with the band and will optimistically leave it under a bush with the hopeful intention of picking it up on the way back—which will probably prove to be by another trail.

"A season's kid crop left thus as prey for coyotes and 'bobcats' will very quickly vanish. I keep mine in the corral or a small pasture until they are several months old, when it is safe for them to follow the band. This provides a certain means, too, during the spring months for making sure of the return of the band every afternoon about 4 o'clock—a simple system.'

When Herder Is Needed

"When goats are put on a new range, several absolutely necessary safeguards must be provided. They must have a herder, who should have a dog trained to drive and to fetch them from a distance, and they must have a corral and a shed to which they must be returned every night. This teaches them the location of their home and provides them with shelter during storms.

"A small band, familiar with the range, can, while feed is abundant, be successfully handled without a herder. If the range is stocked to capacity, however—as, of course, it should be to get the most profit out of the business—a herder is again necessary.

"He ranges his band in such a way as to preserve the feed as long as possible into the season and get the most out of it, and always saves the close-in feed for times of storm. The goats like to have the sheds at hand during the hardest showers. At different seasons he moves the camp to a higher or lower altitude, as the case may be, in order to get the range in each location at its best development. Even a small band should have two camps at least, if it can be so managed.

"Many points in the management of the range are naturally peculiar to the locality in which a grower has established himself. In Southern California, I feel that periodical brush burning on the public lands, under Government direction, will eventually be adopted when it is generally understood what a valuable asset the brush range is. It can thus be made more accessible for stock, with a marked increase in the growth of wild grasses and flowers of value to cattle and goats alike. At the same time the brush will be preserved in even greater vigor as a water-shed protection, and the danger from sweeping brush fires will be greatly lessened."

On Diversified Farms

'The advantage of Angoras in diversified farming is one point of interest to ranchers of Southern California, which Mr. Danvers' story does not cover. This practice has proved of great benefit in Texas, according to an authority in that State, Aubrey Gist. Mr. Gist says:

"Any farm which includes rough pasture land with more or less brush and noxious weeds needs Angora goats to eradicate the weeds and useless underbrush. A reasonable number of goats on a pasture will soon increase the grazing capacity of the land by keeping down the weeds and brush and thus giving the grass full opportunity to grow. It has been demonstrated again and again that a greater return can be realized from a given acreage of pasture land where goats are a part of the livestock kept on it, especially if the pasture is brushy, than where none are kept. A woven wire fence, suitable for hogs and other livestock, will answer also for goats."

Ask the Man Who Owns A PACIFIC

The best proof of the worth of a silo is the opinion of the farmer who owns one. Ask any **Pacific** owner about this silo. See what he tells you about silos in general and **Pacific** in particular.

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We built the **Pacific** for the farmer's use. Years of valuable experience gave us a clear insight into his requirements. As a result we have a silo that will stand every test you may put it to.

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Pacific patent cover is self-supporting, is water-tight and fitted with ventilator and manhole.

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Buy a **Pacific** Tank. Have water for all your needs all the time. Water for your stock; water for your home; water for your garden.

In case of fire you will need the **Pacific** Tank. It's for home protection.

Pacific Tanks are built of **Redwood,** strong and well seasoned. This lumber makes the most durable and serviceable tank material. Bound with highest-grade, soft-steel hoops.

Pacific Tanks will not leak, shrink or burst.

Pacific Patent Non-shrinking Tanks are fitted with small grooves or channels which permit the water to flow through and around the joints. This keeps the staves tight at all times. No matter how low the water gets, the staves will not shrink.

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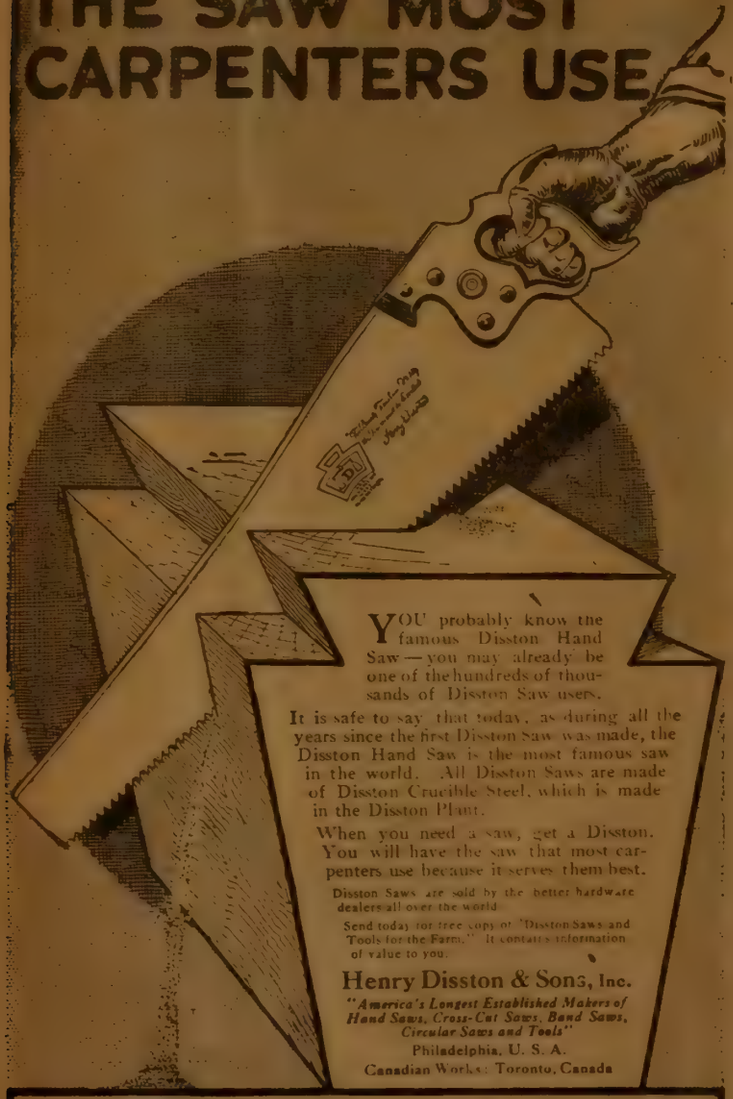

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Thirty Years of Gopher Getting

An Oregon farmer describes the methods he has found most effective and tells about what is believed to be the world's champion catch.

THE writer has waged a 30-year war on that pestiferous pest, the pocket gopher. All the methods of civilized and uncivilized warfare have been employed—shooting, trapping, poisoning, drowning and the use of asphyxiating gases.

The true pocket gopher is so-called because of the pockets or sacks on either side of the head. These are used to carry food and sometimes dirt. From the home nest, deep under ground, tunnels are run in various directions. These are usually about three inches in diameter and six inches below the surface. Numerous piles of dirt mark the location of the tunnels, but all openings are kept tightly closed. Not only do these hillocks make rough going for vehicles and machinery, but in meadows they play sad havoc with the sickle of a mowing machine. The runways, moreover, seriously interfere with irrigating on sloping land. The worst injury, however, is the destroying of tree and plant roots, bulbs and tubers. Gophers will eat the roots of almost any cultivated plant and are especially fond of clover and alfalfa. They sometimes do serious damage in potato fields and young apple trees often have their roots cut off, trees three inches in diameter occasionally being killed by these pests. Although State and nation-wide warfare is now being waged against them, I do not believe the average farmer realizes the extent of the damage they do.

The common steel trap was finally discarded by us because gophers sometimes succeed in extricating themselves from its jaws after being caught and because they must climb over part of the trap to reach the trigger. The latter objection applies to the common wire trap which has a flat, horizontal, tin trigger near the middle of the instrument. The gripping-jaw trap has been used quite successfully and extensively by some of my neighbors in southern Oregon and is one recommended most highly by T. H. cheffer of the U. S. Biological Survey.

A Poison Formula

Poisoned wheat, potatoes, carrots and raisins have been used, but without much success. Mr. Scheffer recommends the following method of poisoning gophers: Two quarts of sweet potatoes, carrots or parsnips cut into pieces about as large as the little finger and an inch long are dusted with one-sixteenth ounce of powdered strychnine. The bitter taste of the poison may be partially disguised by mixing with the latter one-tenth its bulk of saccharine. A pepper box is used to sprinkle on the poison, the cubes being stirred so they will become evenly coated with the chemicals. The pieces of poisoned vegetables are dropped into the gophers' runways through holes punched into the latter with a sharpened broomstick or similar instrument, which can be used more effectively in hard ground if a footrest be affixed about ten inches from the sharpened end. Although gophers soon learn to avoid poisoned bait, a few may be killed in this manner.

Carbon bisulphide has been used by pouring a tablespoonful or so over a small wad of rags or prepared waste ball, placing the latter in a tunnel and then quickly closing the opening with dirt. We have not become very enthusiastic about it, however. This liquid is very volatile and must be handled quickly to prevent loss by evaporation. The odor is very disagreeable to men as well as to gophers, making its use an unpleasant task. Since all the tunnel openings must be closed to prevent the escape of gas the latter travels very slowly underground, there being no draft to carry it against the dead air. When a gopher encounters the first foul scent he retreats to a cross tunnel and quickly stops up with dirt the one through which the gas is coming. Gas cartridges were next tried, but with little better success. These resemble a giant firecracker which explodes shortly after the fuse is lighted. While better results are obtained by exploding the carbon bisulphide, we finally returned to trapping as the surest method.

Remarkable Trapping Record

The most effective way I have found of exterminating gophers is to catch them with a trap which consists mainly of a heavy metal base and two steel rods. The latter extend along either side of the runway and terminate in two sharp jaws which when released, spring together, piercing and strangling the victim. The trigger extends into the middle of the hole between the rods, the end not quite reaching the jaws. This is the style of trap mainly used by Claude Harris, a Marion county high school boy who, with some assistance from his younger brother, has caught 7094 gophers the past two years. Seventy-five were caught in a single day. With fifty traps 2898 rodents were caught in the three months' summer vacation of 1916, the remaining 4102 being taken with twenty-five traps in seven months of the previous year, only part of the time being devoted to the work during the first three months. This is undoubtedly the world's record gopher catch and shows what can be done by perseverance and the use of right methods. The county paid ten cents for the scalps and the land owners an equal sum for the tails, making a total of $1418.80 received for ten months' work.

The best time to trap gophers is during wet weather, when the ground is soft and digs easily. With a wagon endgate rod or any slender, pointed instrument punch into the freshest hillocks until a hole is located. Open the latter with a small trowel or dibble, digging the dirt away a little to admit the trap base so the latter will be nearly horizontal. Insert the jaws or clamps into the hole partially closed, then open and twist the trap a little so as to sink the jaws into the walls of the hole.

Bait for the Trap

A small piece of any of the previously mentioned vegetables may be used for bait, although Harris uses nothing but a block of wood about an inch square. Partially darken the hole by throwing a handful of leaves or grass over the entrance. The trap should be set in one of the short branch laterals and the jaws must not extend into the main runway. If the trap is set in the main runway, one should be placed on either side of the opening. Do not handle the trap any more than necessary nor place the hand in the hole, as gophers have a very keen sense of smell and their suspicions are easily aroused.

A very important point and one that is not generally known is that it is necessary to smoke the jaws of the trap to remove the scent of the animals caught. After a trap has been used three or four times smoke the jaws for about two minutes. Grass or leaves make a good smoke and are generally easy to obtain. It is also a good plan to sharpen and smoke the jaws of a new trap before the latter is used. During wet weather smoking is not so essential, as the dampness seems partially to absorb the scent.—O. H. Barnhill, Ashland, Oregon.

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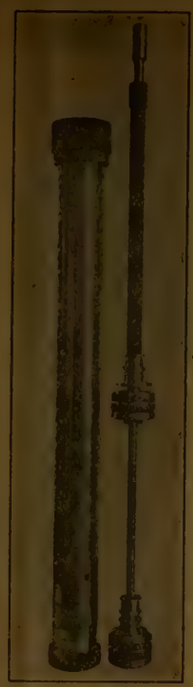

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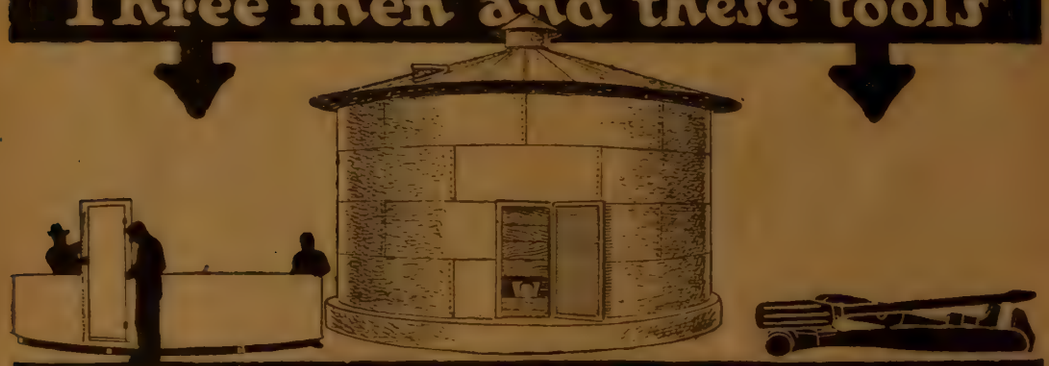

will put up a CALCO BIN quickly

ERECTING a Calco Grain Bin is simplicity itself. A book of instruction, illustrated, accompanies each bin. Every piece of the Calco Bin fits—exactly. No skilled labor is needed, three men and three tools can do it quickly. From laying out the guide stakes to fastening on the ventilator cap—every operation follows naturally—the result is a permanent investment on your farm.

The free booklet "Calco Grain Bins" tells of many ways of saving money with the Calco. Write for it today.

Model 244

Calco Hog Trough

Popular because practical. They help raise healthy hogs; they are sanitary, strong and durable. Built of Armco Iron and Cast Iron. Lengths from 24 to 120 inches. Ask for price list of this profit increasing trough.

Model 262

Calco Automatic Hog Watering Fountain

Constant fresh water, without overflowing. Connects to water supply pipe—works automatically. Bottom and trough of cast iron, reservoir of galvanized Armco Iron. Write for circular with complete specifications and prices.

Model 250

Calco Automatic Grain Feeder

Gives plenty of feed—without waste. Feeding trough and bottom of cast iron, storage bin of galvanized Armco Iron. Capacities from 2 to 10 bushels. Write for details and price list.

California Corrugated Culvert Company

LOS ANGELES
421 Leroy Street

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FARMERS CLASSIFIED MARKET PLACE

POULTRY

BROWN LEGHORNS—

The greatest EGG-MACHINES and the HARDIEST of all. Also prize-winners at New York, Boston, Chicago, San Francisco, etc. Eggs from the finest matings in all America, $3 and $5 per 15; $15 per 100.

WILLIAMS BROS.,
FULLERTON, CALIFORNIA.

BABY chicks for sale—100,000 S. C. White Leghorn chicks from heaviest laying (Hoganized) stock for delivery every month in the year, at very reasonable prices. Safe delivery of all chicks guaranteed. Shipped safely anywhere west of the Rockies. No money in advance; pay on delivery. Finest hatchery in the world. Established 1898. Further information write
MUST HATCH INCUBATOR COMPANY,
432 Seventh St., Petaluma, Calif.

IF YOU WANT EGGS, get Andalusians. Hatching eggs for sale. Dan M. Calbreath, Monmouth, Ore.

CAPON SPECIALIST

MAKE CAPONS of your cockerels and double your profit. Heavy breeds make 12-lb. capons. 8 weeks in good age. Caponizing 25c each. Instruments $4.50. Send stamp. Mrs. H. Ament, Capon Specialist, 428 Kerckhoff Bldg., 6th and Main, Los Angeles.

RABBITS AND PIGEONS

RAISE RABBITS FOR US—We have 117 raisers at the present time in this State; we want 500; we furnish you with original breeders and then buy back all that you can raise, paying $2.00 to $3.00 each for them. Our plan is absolutely on the square. Write today, inclosing 25c for our book on rabbit culture, our 20-page catalogue and our raising proposition in full. The GOLDEN RABBIT FARM, SANTA BARBARA, Cal.

NEW ZEALAND REDS—Pedigreed, registered sires and dams. Ancestry show many winners; 3, 5 and 8 months old. Also heavy weight 4 months old utility does. Extra fine. E. Kelly, 834 Main st., Petaluma, Cal.

100 YOUNG for rabbits sacrificed; 2, 3, 4 mo., 50c, 75c, $1.00. Beautiful does bred to 9 lb. Eng. for sale, $2.25, $3.25; 12 lb. Belg.-Fl. Gt., $6.50, etc. A. Bell, Palo Alto, Cal.

ARMSTRONG'S New Zealand Red Rabbits; improve your stock with a good, healthy buck, pedigreed and registered. Prices right. ARMSTRONG'S RABBIT YARDS, Petaluma, Cal.

RAISE RABBITS for us. We supply the breeding stock. Send stamp for particulars. H. E. Gibson, Box, Arcadia, Cal.

FLEMISH GIANTS, pedigreed. None better; also utility stock. Hotel De Bunny, 1578 W. 46th st., Los Angeles, Cal.

HIMALAYAN RABBITS (FUR) ALWAYS WIN. Write for folder. Mrs. Leroy B. Hackett, Oakland, Calif.

RABBITS—New Zealand Red breeding stock. R. C. Specht, Route A, Sonoma, Cal.

FOR SALE—Rabbits; New Zealand and Flemish Giant. Paul Kruger, Watsonville, California.

BIRDS, DOGS, PETS

BIRDLAND.

For birds, go to Birdland, where you will find the finest and largest collection of pets of all kinds in the country, such as warbling canaries, beautiful talking canaries and the bell-noted rollers, grand songsters, aviary birds of a great variety from everywhere; also ornamental land and water fowl, monkeys and other pets; gold and fancy fishes, globes, aquariums, bird and animal cages, large stock and wide variety to select from; food, remedies, seeds and all other accessories.

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We have them, not just one or two birds, but a number of each and every kind in the market. Call and see them and let us tell you about them.

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Our dog department at 216 Mercantile Place offers the best lot of puppies of all kinds, also a full line of dog supplies and all the standard foods and medicines. Illustrated catalogue free.

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[illegible] cure and White Diarrhea Cure, guaranteed or money refunded. By mail, 25c each. Free booklet. Agents make big money. Address National Gape Cure Co., Brandenburg, Ky.

AGENTS, SALESMEN—Wanted

WANTED—1000 poultry men to try the new Feed-Action automatic poultry fountain, none better, circular. John Imsenweiler, Inglewood, Cal.

SITUATIONS WANTED

WANTED—By married man, position as superintendent or foreman on ranch; thoroughly experienced in laying out and planting orchards, pruning, growing fruit, general farming, alfalfa growing and irrigation. Answer P. O. Box 271, Isleton, Calif.

BEES AND BEE SUPPLIES.

BEE-KEEPERS' Catalog Free

Write today for our catalog of the complete line of beekeepers' supplies. A. I. ROOT CO., 1826 E. [illegible] street, Los Angeles, Cal.

LUMBER—Building Material

LUMBER, SHINGLES, POSTS sold direct. Kariot Lumber Company, Tacoma, Wash."

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400 ACRES.
TULARE COUNTY'S BEST FRUIT LANDS.

With raisin vineyards selling at $300 to $[illegible] per acre and table grape vineyard owners refusing $1250 per acre and fig growers selling at $800 to $1000 per acre and orange groves, in full bearing, bringing $1500, to $2500 per acre, and few of the best ones for sale, this 400 acres of first-class grape, fig, olive and orange land
AT $125 PER ACRE,
and on terms of $5000 cash, balance five and seven years at 6 per cent per annum, is a snap that you will never find again. It is in Tulare County's best citrus and grape section and one mile from town of ORANGE COVE. All smooth and best of loam soil. Could not be better. Under Pine Flat ditch survey, and when this high line canal goes through will be cheap at $350 per acre. Beautiful orange groves and vineyards adjoining. Every acre good. No pioneering. Plant 80 acres of this land to Red Emperor grapes and it will pay for all of the balance in 5 years.

For information see or write
M. S. ROBERTSON,
313 Story Bldg., Los Angeles, Cal.

NEAR EARLIMART, TULARE COUNTY, 40 or 80-acre tracts, very best alfalfa lands; shallow water, $100 an acre, on easy terms. Near McFarland, 160 acres alfalfa land, $50, terms. Owned by an estate. Write for full information.
JOHN RUPP,
417 Story Bldg., Los Angeles, California.

FOR SALE—LUCK UNNECESSARY TO GET RICH if you have cheap California acreage; I can sell you 40, 80, 160 acres, near railroad town, boulevards, electricity, water soon; price $10 to $25 per acre; now listen; land within one mile is producing $2000 per acre; Coachella Valley. O. S. WILSON, 727 Story Bldg. Bdwy. 1.

WRITE for our free circular on cost of turning raw land into producing alfalfa fields. Good land in northern L. A. County in the water belt, $55 an acre, one-tenth down. Rich & L Ranch, Fay Bldg., Los Angeles, Cal.

REAL ESTATE

MEXICO.

Farseeing investors are looking to Mexico. They predict a great boom there. The writer has just returned with some farmers who bought and are returning to cultivate their land. We have a number of American farmers who are located there at present. They are only too glad to explain the richness of this great valley, with the many possibilities for the small investor that cannot be obtained elsewhere; only ninety miles from the border, on the main line of the Southern Pacific Railroad. Cheap land, cheap labor and low taxes. Good land in Mexico is bound to rise in price soon. Now is the time to buy. Call and let us explain our plan of colonization to American farmers.
A. M. CONARD,
707 I. N. Van Nuys Building,
Los Angeles, Cal.

FOR SALE—560 acres land, Government patent, in San Luis Obispo County, 12 miles from Santa Maria. Good grazing and timber land. Four-room house, big barn and outbuildings. Fruit trees, vines and berries. Stock and growing crops go with place; nearly all fenced and cross fenced; well watered; soft water at house. All farming tools go with ranch. For full particulars address:
W. W. PALMER,
Santa Maria, Cal.
Price of place, $10,000; cash or terms.
No exchange.

FOR SALE—Mountain ranch, 40 acres deeded; large canyon, range free, covered with oak and pine; wonderful opportunity for hogs; 20 acres under irrigation; hog-tight fence; family orchard, consisting of cherries, apples, pears, English walnuts; 5-room house, furnished. Price $3500.
DR. G. W. HARVEY,
Care La Grande Hotel,
Chico, Cal.

GOVERNMENT LANDS

THERE is a big tract of smooth, fertile valley land in California, now open for entry under the homestead or desert land laws. This land is now being put under irrigation by Farmers' Mutual Ditch Co., 5 miles of the ditch is now constructed. This is a valley of opportunity, close to pine forest, adjacent to lakes, contiguous to mountains; rich soil, cheap water, easy terms. Don't pay location fees. For particulars, address INTERSTATE DEVELOPMENT CO., 826 L. A. Investment Bldg., L. A., Cal.

FLORIDA FARMS FOR SALE

25-ACRE Florida farm, $1650. With 6 good cows, 5 calves, dairy supplies; now supplying close-by market 14 cents a qt.; 1¼ miles to R.R. town and county seat. Big profits from loam tillage; pasture borders large lake; 5 acres wood; farm fenced woven wire. New 5-room cottage, verandas; new 50-ft. cow barn, feed room; to settle quickly, buyer gets all for $1650. Details page 68, Spring Catalog Bargains, 19 States; copy free.

STROUT FARM AGENCY,
1210A Heard Bldg.,
Jacksonville.

FARMS FOR SALE

80 or 160 acres good alfalfa and fruit land, Turlock irrigation district, near Modesto; $100 per acre; 10 per cent down, 10 per cent each year thereafter. Address Owner, 1320 12th street, Modesto, Cal.

40 ACRES—Good improvements; good soil, water and grass; fine for berries, vegetables, hogs and cows. Price $3000. No trade. H. Koenig, Fort Bragg, Cal.

REAL ESTATE—Sale or Exchange

100 ACRES unimproved mountain land, 4 miles town; good fruit land; plenty timber; want clear; owners only. Box 23, Cloverdale, Cal.

FARMS WANTED

WANTED—TO hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

PARCEL POST

CO-OPERATION (NOT OPERATED FOR PROFIT) reduces living expenses. Particulars and catalog from Co-Operative League, Commercial street, San Francisco.

LIVESTOCK—Chester Whites

THE BILLIKEN HERD OF CHESTER WHITES. NOTHING TO OFFER AT PRESENT. Herd boars are "Billiken," grand champion the 1917 State fair. Conceded by experts to be the best Chester boar that ever came to California. "Wildwood Boy" of Wildwood Prince—Wonder blood lines, pronounced to be the largest and heaviest Chester boar in the State. "Bonnie Model," sired by a Combination-St. Elmo boar and out of the 1916 State Grand Champion sow. The sows are all big, smooth and stretchy, with plenty of bone and lots of quality. Have recently added some bred sows of the extreme large type so popular in the East at present. Sows are bred for March and early April farrows and I will book a limited number of orders for these coming pigs, delivery to be made when weaned. C. B. Cunningham, Mills, Sacramento County, Cal.

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KARAKUL DESERT SHEEP.

Do you wish to raise PERSIAN LAMB and ASTRACHAN FUR and make twice as much money as you do when raising sheep for wool and mutton only?

The KARAKUL is much hardier than even the goat, besides producing the finest mutton and wool in the world.

For information, address
KARAKUL, BOX 827, ORCHARD AND FARM EXAMINER BLDG.,
LOS ANGELES, CALIFORNIA.

LIVESTOCK

"RAISING Calves Without Milk." Send for free booklet telling how to do it. Coulson Company, Petaluma, Calif.

LIVESTOCK—Duroc Jerseys

BOUDIER DUROCS all sold out, excepting some choice September gilts, breeding and satisfaction guaranteed. H. E. Boudier, Big Ranch Road, Napa, Cal.

LIVESTOCK—Berkshires

FOR REAL GOOD BERSHIRES write Frank B. Anderson, Box 724, Sacramento, Cal.

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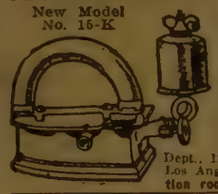
THE FAMILY BOOKLET—A treatise on the cause of our diseases; how to foresee and prevent them. This is a scientific and interesting volume in condensed form and will be of great help to the sick as well as to the healthy.

Write now for a free copy to A. A. Guglieri, M. D., Postoffice box 1299, Madrone, Calif.

MISCELLANEOUS—FOR SALE

New Model
No. 15-K



Do You Iron Today? If so, keep cool. Use the Imperial self-heating Iron. Makes its own gas, generated from kerosene. The cheapest and best iron made. Cole Lite & Sales Co., Lamp Dept., 1216 to 1220 E. 41st st., Los Angeles, Cal. Demonstration room, 234 S. Hill st.

IF=IT=LEAKES

DON'T THROW THAT FOUNTAIN SYRINGE AWAY, BUT SEND 35c FOR STA-STUCK HOME REPAIR OUTFIT; POSITIVELY REPAIRS Fountain syringes, hot water bottles etc. Money back if not satisfied. The STA-STUCK CO., 325 Grosse Bldg., Los Angeles.

THE "FUNNY GUN" is an absolutely harmless toy—a regular boomerang. Shoots a 3-inch metal ring with a spin that brings it back to you. Young and old can enjoy it. Send for one today. Price 15 cents, plus 2 cents postage.

MORSE SPECIALTY CO.,
Dept. E., P. O. Box 254,
San Francisco.

MISCELLANEOUS—To Exchange

5000 AVOCADO seedlings for sale; will furnish buds for same. West India Gardens, Altadena.

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HAZARD & MILLER, ATTORNEYS AT LAW—Patents and Patent Courses. Henry T. Hazard established the agency in 1875, which has been uninterruptedly in business since that time. Herman Miller, eight years examiner in U. S. Patent Office. Our library contains the record of every U. S. patent. Examination without charge. HAZARD'S 1918 BOOK ON PATENTS FREE. 504-505-506 Central Building, Sixth and Main streets, Los Angeles.

SEND FOR FREE BOOKLET "All About Patents and Their Cost." Shepherd & Campbell, Patent Attorneys, 734K 8th st., Washington, D. C.

COMMERCIAL PRINTING

1000 BUSINESS CARDS for $1; letterheads, envelopes, bills, wedding work, show cards, rubber stamps. ROBERT HILL, 2188 Sutter st., San Francisco.

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GOLD, amalgam, rich ore bought; cash; assaying 50c. Pioneer Assaying Company, 636 Market street, opposite Palace Hotel, San Francisco, Cal.

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WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

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LEGUME BACTERIA. Don't Risk Failure! Inoculate Vetch, Alfalfa and all Clovers. Cultures $1.50 each, postpaid (enough for 60 pounds of seed). We are Coast distributors of products of reliable Eastern laboratory. Seeds, too, and seed grains.
RALPH WALDO ELDEN,
Medford, Oregon.

GIGANTIC CLIMBING NEW GUINEA BUTTER BEANS. DELICIOUS EATING. One enough for a family of twelve persons. Grow as heavy as 28 lbs. Prolifice bearers and easy to grow. Seeds 50c package, with full directions. E. Harrison, Willows, California.

FLORIDA SOUR AND CALIFORNIA SWEET Seedling Orange Seed-Bed Stock. The time to plant is propitious; order now.
SOUTHLAND NURSERIES,
1941 E. Colorado St., Pasadena, California.

HARDY Hybrid Alfalfa. Wonderful Grower. Getting thicker and better with age. Permanent. Quality unexcelled. Write for proof. J. L. Lawson, San Jose, Calif.

Write for our
PLANTING GUIDE
WESTERN SEED CO.,
116 E. Seventh Street, Los Angeles, California.

I PUT Elephant Grass on Wagner Ranch, Descanso, Cal. If interested in grass write me for competent advice and plants. J. W. H. Taylor, Julian, Cal.

STOCK PUMPKIN SEED.
Good germination; any amounts, 20c per lb.
Aurora Seed Mill, Stockton, Cal.

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FIVE RARE NEW GARDEN NOVELTIES—Extra prolific, intensely practical. (See detailed description in my classified advertisements in February and March issues, this journal). Giant Marrow Cabbage, eighty tons per acre. Kale's eclipser generally. Plant year round for Calif. succession "Greens." "Golden Potlatch" push pea; rarest grown; three crops from same roots in 1917-18.

RAREST BUSH AND POLE BEANS for Coast. "Purple Perfection" and Japanese "Purple Special" Potatoes—the latter purple throughout. Fancy salad makers. Small start of all five for 50c prepaid. Photos, suggestions FREE. E. E. Martin, Guaranteeing Seedsman, B-4, Charleston, Wash.

NURSERY TREES AND PLANTS

TREES—Trees for sale. Fruit trees of all kinds. Also 10,000 Placentia and Eureka Walnut trees. These trees are first class grafted and budded stock. Order now. The Third and Bush Street Nursery Co., Santa Ana, Calif. Phone 938W. E. E. Franke, prop. Res. phone 769R.

TREES, TREES—Placentia and Eureka walnuts on black. A general line of high grade nursery stock. A. R. Marshal's Nurseries, 1212 Ross st., Santa Ana, Cal.

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IMPLEMENTS AND RANCH SUPPLIES.
SAMPLES and slightly used. Four floors. Large stock. Liberal credit. Save 50 per cent on some. No branches.
ARNOTT & COMPANY, INC.,
The Yellow Front. Established 1892.
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IDEAL HOIST FOR UNLOADING HAY, driving fence posts, stretching fences, erecting buildings, clearing land, road, buildings and numerous other purposes. Inexpensive; great labor saver. Send for circular. U. S. Iron Works, Seattle, Wash.

MOLINE tractor for sale cheap, with three 9-inch plows and one Moline disc plow. Tractor has only plowed forty acres. Ben S. Hessel, R3, Santa Rosa, Cal.

AUTO TRAILERS

AUTO ACCESSORIES, SUPPLIES

FORDS run 34 miles per gallon with our 1919 carburetors. Use cheapest gasoline, half kerosene or all distillate. Start easy any weather. Increased power. Styles for all motors. Runs slow high gear. Attach yourself. Big profits for agents. Money back guarantee. 30 days' trial. Air-Friction Carburetor Co., 325 Madison St., Dayton, Ohio.

ENGINES

SEVERAL NEW AND SLIGHTLY USED ENGINES. ARNOTT & CO., Implements, 113 South Los Angeles st., Los Angeles.

MISCELLANEOUS—Wanted

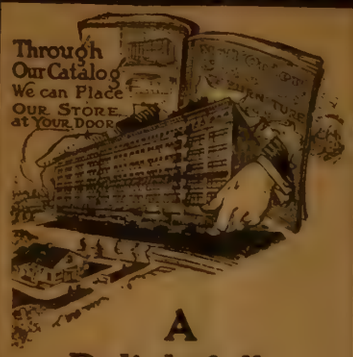
WANTED—Homes for James, aged 8, medium complexion, quiet, attractive; Harold, 10, blond, musical; Emily, 11, healthy, handsome, intelligent; Irving, 11, the Ad Club mascot for 1919, honorable, nice looking, bright. Apply Children's Home Society, 3616 Griffith ave., Los Angeles, Cal.

SECOND-HAND MACHINERY

EVERYTHING SECOND HAND—All kinds stoves, plumbing supplies, pipe, farm tools a specialty. NOAH'S ARK, 609 E. 1st St. Phone 19750.

SAFETY RAZOR BLADES

SAFETY RAZOR BLADES re-edged, 30 cents dozen. Howard's, Box 93, Los Gatos, Calif.



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YOUR HOME may be far from the city, yet it need not lack the city-home comforts. It can be just as modern in its appointments—just as cozily and beautifully and comfortably furnished as any city home, and well it should be.

Write to BARKER BROS., Los Angeles, and simply say, "SEND ME YOUR CATALOG."

This 128-page book of "Better Home" furnishings which we will send you FREE, postpaid, is veritably "our store" itself placed right at your door. —a book filled with pictures and descriptions of GOOD furniture of the very same high quality, style and finish that Los Angeles city residents are buying for their homes.

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Complete Home Furnishers
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WORTH A BIG FARM
Bale your own and neighbors' hay; 100 days work earns $1000 to $2000 a season with the

A Press for Every Purpose
LIGHTNING LINE

Power Press or Tractor Baler, Junior Belt, Juniors with extension frames, combined press and engines, horse power press, 1 horse baler, etc. The right kind of a press for your needs. Presses bought from us 20 years ago still in use. Send today for complete catalog or write us your needs and we will advise you and start you in business.

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DAISY FLY KILLER PLACED ANYWHERE ATTRACTS AND KILLS ALL FLIES. Neat, clean, ornamental, convenient, cheap. Lasts all season. Made of metal, can't spill or tipover; will not soil or injure anything. Guaranteed effective. Sold by dealers, or 5 by EXPRESS, prepaid, $1.25

HARMON SOMERS, 150 De Kalb Ave., Brooklyn, N. Y.

New Wealth for San Joaquin

One of the most remarkable private reclamation projects in the West has just been thrown open for division into small farms. The soil is said to be unrivaled by that of any other section in the world.

SAN JOAQUIN COUNTY and Stockton, already centers of prosperity, seem destined to experience an immediate impetus, following the opening of the Delta (reclaimed) farms for public sale.

Seven years ago, a company was organized for building levees and canals for the purpose of draining the wonderfully rich peat lands lying between Stockton and the bay. The tremendous yields secured on these lands have been, as is generally known, remarkable, and until recently the owners have refused to sell the land, leasing it on a cash or crop-share basis, principally in large tracts.

The lands have rented readily, according to those who have been instrumental in developing them, at from $18 to $30 an acre. Now that the owners have decided to offer them for sale in small tracts, several thousand acres will be disposed of at $250 an acre, and some of the more centrally located land at $275, on 20-year terms.

It is claimed for these lands that the farmer's only gamble is the market price; that he can be absolutely sure of his crop. Irrigation is accomplished by allowing the drainage ditches to fill, the porous soil soaking up the moisture by sub-irrigation. The cost of drainage and irrigation, the owners say, is from 60 cents to $1.50 an acre a year. The unique advantage claimed for these lands is that the farmer may control the exact height of the water table. Great electric pumps discharge the excess water from the canals into the streams.

Water transportation is employed for moving much of the produce grown on the Delta farms. Stockton is at the head of river navigation and a system of canals insures transportation facilities for various parts of the property. This section is also well served by rail.

Cheap Transportation

Most readers of Orchard and Farm are already familiar with the startling figures given in connection with Delta crop yields. The soil is said to have been awarded a medal as the richest in the world. Recent data given out by the owners show that fields of Indian corn yielding 80 bushels of shelled corn to the acre have been grown, while one potato grower is said to have obtained a yield averaging 270 sacks to the acre, on 1400 acres.

One 15-acre field of onions is said to have averaged 500 sacks, while 200 acres of barley, according to recent figures, produced 45 sacks to the acre. The average yield of onions is said to be, conservatively, 250 sacks per acre. Celery and asparagus have also proved to be very profitable crops.

The opening of this remarkable tract for sale in small plots undoubtedly heralds an era of intensive development which will add materially to the already tremendous wealth of San Joaquin county and Central California generally. All the signs point to a quick sale of available lands. Crop prices are high and unusual inducements are being offered those who join this prosperous community, such as the opportunity to make deferred payments from crops, and the backing of an unusually strong sales organization.

A Typical Field Scene

During the harvest season on the Delta Farms in San Joaquin County. Because of its remarkable richness and tremendous production this land has been said to make "the biggest acre in the world." And if acres were measured by their yields, who could deny the assertion?

Roosevelt Memorial Is Planned

Characterizing the late Colonel Theodore Roosevelt as "a friend of the farmer in deeds as well as in words," the Roosevelt Permanent Memorial National Committee is urging agricultural people everywhere to support the movement for the erection or establishment of some permanent memorial to the former President.

Many prominent Americans in all walks of life are on the committee which is backing the proposition and it has been announced that every cent received will be spent for a memorial, the expenses of the organization being met by gifts from friends and admirers of Mr. Roosevelt. Checks should be made payable to the Roosevelt Permanent Memorial National Committee or to the Treasurer, Albert H. Wiggin of the Chase National Bank, New York, and mailed to the Roosevelt Memorial Committee, Wm. Boyce Thompson, chairman, One Madison avenue, New York City.

The Man Who Buys a
DE LAVAL
Is Taking No Chances

MOST any kind of cream separator will do fairly good work the first few months, when it is new.

But if it is a cheaply made or inferior machine, after the first few months your trouble will begin.

And the worst of your experience with such a machine will not be the fact that it wears out quickly or that it runs hard, or that you are piling up repair expense, but that you are losing a lot of butter-fat that is worth 50 to 60 cents a pound.

And that is what you really buy a separator for—to save this valuable butter-fat.

Any time you buy a cream separator—no matter who makes it or what claims are made for it—that has not behind it a long record of satisfactory service, a record known to all, a record that is in itself a guarantee of satisfactory service, you are taking a gamble with all the odds against you.

Why take chances at all when you come to select a machine that may mean so much in increasing the profit from your cows?

There is one cream separator that has been the acknowledged world's standard for over 40 years. It's the one cream separator that is used by the creameries almost exclusively. Dairy farmers the country over know the De Laval and its sterling quality. Experience has shown them that

It is the best cream separator that money can buy

Order your De Laval now and let it begin saving cream right away. See the local De Laval agent, or, if you don't know him, write to nearest office.

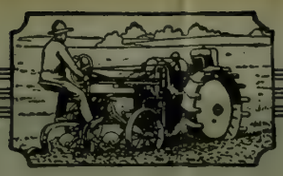
DE LAVAL DAIRY SUPPLY CO.
THE LARGEST DAIRY SUPPLY HOUSE ON THE PACIFIC COAST
61 BEALE STREET
SAN FRANCISCO

Dairy Supplies

Cream Separators, Milk Coolers, Milking Machines, Milk Bottles, Cans, Brushes, Bottle Fillers, everything for handling milk.

Poultry Supplies
Incubators, Brooders, Brooder Stoves and Heaters, Feeders, Fountains, Remedies.

Oakland Dairy Supply Co.
404 Eleventh St., Oakland, Cal.
C. E. Hill, Mgr.



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June, 1919

Sunflowers for Ensilage

10c Per Copy

ORCHARD and FARM

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After Thoughts of the Tractor Demonstration

Offices
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ORCHARD and FARM

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The Sacramento Tractor Demonstration

THOSE who attended the field exhibition of tractors, held at the Capital City May 6 to 11, went, almost without exception, to learn. And very few of the spectators came away without having broadened their knowledge. The exhibitors, however, also learned, and because of the facts brought out by this demonstration—facts which are likely to have an important bearing on future exhibitions of a similar nature, we publish here a frank discussion of the show, which we feel will be of interest to tractor sellers as well as tractor buyers.

WITH nearly fifty different makes of machines on exhibition, many of them "manned" by fearless farmerettes, the great annual demonstration of the California Tractor and Implement Association opened auspiciously at Arden Acres, near Sacramento, Tuesday, May 6th. Although conditions were such as to require strenuous efforts at the last minute in order to receive the visitors, the formal opening was accomplished with little confusion, and further preparations made for the large crowds expected the following day. While some disappointment was expressed at the attendance early in the show, new visitors arrived daily and Thursday's crowd was estimated at from 18,000 to 20,000. Spread out upon the great demonstration field, the visitors were deceptive as to numbers, but the general satisfaction of the exhibitors as to this feature of the show was summed up by W. H. Gardner of Marysville, president of the association, who stated that he was delighted with the success of the affair.

"Climbing Itself"

Trend of the Times

There was an unusual amount of dissatisfaction with certain features of the demonstration; hasty attempts to analyze the situation seemingly failed to bring about definite conclusions, but the general discussion given elsewhere on this page may answer, in part, the questions so many visitors and exhibitors were asking. Held at a time when farmers and fruit-growers were extremely busy with their work, and under difficulties unappreciated by the critics who failed to understand the true situation, the show unquestionably was disappointing in some respects to both its manager and promoters. Yet the members of the association, admitting that some mistakes were made, deserve great credit for staging such an elaborate and comprehensive show. We offer the suggestions given in this issue of Orchard and Farm for what they are worth, and, far from placing ourselves in the position of knockers in a field of boosters, believe that our unwillingness to assert that black is white, when everybody knows it is black, will strengthen rather than weaken our position, not only with our farmer readers, but our advertisers as well.

We do not, however, agree with those who pronounced the demonstration unsuccessful. The show included many excellent and unusual features. It was plainly designed to be strictly a business and scientific proposition, and useless "circus" features, calculated to draw the attention of serious-minded visitors away from the study of exhibits, were wisely eliminated. Unquestionably no previous exhibition in any part of the country has brought out so forcibly the versatility of the tractor. And no other show has presented such an opportunity for the study of special

WE all remember the time (not so many years ago) when we lined up along the roadside to watch a bucking, snorting, high-wheeled "gas buggy" pass by at a speed of almost twelve miles an hour, and yelled, "Get a horse; get a horse." In those days it did not require any special features to secure attendance at an automobile show. The mere appearance of a "horseless carriage" on the street was sufficient to draw a crowd from all directions.

But a few short years has brought a marvelous change. Familiarity has dispelled the glamour of the early days. And now the tractor business is undergoing a similar development. So rapid has been the progress with tractors, however, that the manufacturers and dealers, engrossed in close application to their growing business, have not sensed the change in the attitude of the public. They have presupposed a state of intense curiosity on the part of the layman, which in reality does not exist. The public already takes the tractor as a matter of course, accepting it as a part of the every-day business of farming, and will no longer undergo severe personal discomfort and put up with almost any kind of accommodations in order merely to see the steel steeds at work in the fields.

A modern automobile show must be managed a great deal differently than one held fifteen years ago. The tractor has made as much progress, proportionately, in five years. Therefore, demonstration methods in vogue five or even three years ago are antiquated. This, in a nutshell, explains the undercurrent

Glimpses of the Demonstration Grounds

Many women drivers were in evidence and they very successfully managed their machines even in the most difficult plowing. Insert—part of battery of crawler type machines. As is usually the case at California demonstrations, there was a big showing of the track-laying tractors.

of dissatisfaction which, as almost everyone connected with the recent Sacramento demonstration admits, was in the air during this otherwise successful exhibition.

We do not contend that the demonstration was a failure; far from it. While the attendance did not meet the expectations of the promoters, there were as many as 20,000 spectators present on a single day, and reliable estimates placed the number of automobiles parked at the grounds on this day at 3000. Moreover, many sales are reported. Dealers who expected more sales are seeking an explanation. It is, we believe, simply this: The tractor industry has developed so rapidly that it has not caught up with itself and the tractor dealers have had to solve entirely new problems. The recent show, however, served to bring the true situation to their attention. They have learned that tractor demonstrations must be planned to please the buying public. The successful merchant is the one who anticipates the desires of his customers. Similarly the tractor dealers must feel the pulse of the public and so arrange these essential and valuable demonstrations that the prospective buyer and interested curiosity-seeker alike can make comparisons and draw conclusions with the least possible personal discomfort and expenditure of energy.

No doubt, future demonstrations will consist, first, of two general divisions; one, a number of "still" exhibits, compactly surrounding the lecture-halls and concessions, with a very small demonstration field behind each; the other, a large field, with grandstand accommodations, where very short exhibitions in field work will be made each day by all of the tractors. This much of a show would satisfy the majority of the visitors.

The farmers who are actually interested and are the real "prospects" will, of course, demand more than this. Here is the dealer's opportunity, then, to concentrate his selling efforts where they will do the most good. A force of salesmen will be on duty at each headquarters tent in the "still" exhibit and

(Continued on Page 7)

tractor equipment. There were more than 200 exhibitors, 50 of whom showed tractors and the others machinery, accessories or modern farm equipment of various kinds.

A New Era

The day of using makeshift horse-drawn implements with tractors has passed as the exhibits of machinery and accessories bore witness. One of the largest tractor manufacturers early recognized the fact that two-thirds of the dissatisfaction among buyers was due to the use of inadequate or unsuitable equipment and made arrangements for the manufacture of special "tools" to be sold with the machines. Much dissatisfaction, most tractor men will agree, has arisen likewise from lack of education and general understanding of tractor technicalities among the buying public.

For this reason, and rightly, the modern demonstration is first and foremost educational. While inspired by commercial motives it includes in its broader phases, the education of the public. And the reaction from this feature is worth more to the tractor industry, and consequently to the exhibitors, than the actual sales.

Yet many sales are always made at such a show. Dealers who were disappointed in their showing on sales this time will perhaps recognize the necessity of making a little more smooth, in future, the path of the interested "prospect," but may find surcease in the thought that every great show of this nature strengthens the interest of the public in tractors generally, and brings forcibly before them the progress of the industry. The actual sales resulting from the demonstration can scarcely be computed, for unquestionably the greatest results are secured from "following up" prospects developed at the shows, and many sales closed weeks

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Sunflowers as a California Forage Crop

By Albert J. Mason

SUNFLOWERS for silage! Not. however, the kind that we publish every month in the "Sunflower" column of Orchard and Farm. Admitting that some of the jokes might well be "canned," still we cannot help feeling that as a steady diet, even for livestock, they would be too rich!

We refer, in this case, to the well-known official flower of Kansas, which grows in abundance along the country roads in that State and which may be seen at any time during the summer after a cyclone has blown the dust off the heads.

Regarded in their native haunts as merely an ornament or emblem, they were, strangely enough, first utilized for silage purposes in the Rocky Mountain States. In western Colorado and parts of Montana, as well as in Nevada and Utah, and later in the Dakotas, extensive experiments have been conducted with the result that apparently a wide adoption of this plant for silage-making is imminent. It seems to offer especially attractive prospects to farmers in semi-arid, high-altitude regions, where corn cannot be successfully matured.

California Possibilities

With these attributes, it seems certain that the sunflower will find an important place in the more elevated semi-arid regions of California. It cannot be expected to thrive without water, under desert conditions, but on ordinary dry farming land, capable of maturing a grain crop, and carefully tilled for the conservation of moisture, has been found to produce from 5 to 12 tons to the acre of green forage. Best results are obtained, however, under irrigation or sub-irrigation, but the water requirements of the plant are very low, and no doubt it can profitably be grown in many sections under pump-irrigation. Its natural habitat is a hot, dry region. Yet it is seemingly unchecked in growth by cold nights and because of its rapid development reaches maturity before frost. Probably it will be experimentally grown this year in the lower attitudes as well, many farmers having expressed their determination to try it with their late corn. Since sunflowers and corn, mixed, make a superior ensilage, it is the custom of some growers to plant either an equal area of each or a supplementary patch of sunflowers to use with the corn.

Reports from farmers who have experimented with sunflowers show that they not only make a satisfactory yield, but are very palatable and nutritious, being relished by all classes of stock for which corn silage is used. Augustus Vaux, a Sidney, Montana, stockman, in a recent letter to the National Wool Growers' Association, reported that, after having fed sunflower silage with good results to cattle, he used it for 1000 head of breeding ewes. When it was mixed with corn, he stated, the ewes would select the sunflowers in preferance to the corn, and they not only remained in thrifty condition on sunflower silage alone, but sheared a much heavier fleece than when handled under ordinary methods.

As a Dairy Feed

It is with dairy cattle, however, that the most extensive and satisfactory experiments have been made. In a report from the Colorado Experiment Station is published the statement of George Le Grange of Grand Junction, Colorado. Explaining that his statement is based upon four years' of experimentation, Mr. Le Grange says that he has been able to get better results in butter fat production from his herd of purebred Jerseys than had been previously attained with corn silage. "I think," he says, "that this is contrary to belief that butter fat cannot be 'fed into' a dairy cow. We have found, however, that the feeding of good sunflower silage does, definitely, produce this result."

Bearing out his statements is the published report of an experiment conducted by the Montana Experiment Station, summary of which is given in the following table:

	Lot I Grain and clover hay	Lot II Grain, clover hay and sunflower ensilage
Number of cows in each lot	14	14
Days on test	28	28
Average initial weight	1072	1081
Average final weight	1083	1067
Average gain for period	11	6
Average daily grain per head	13	13
Average daily clover hay per head	21	12
Average daily sunflower silage per head	..	34
Average daily milk per cow	33.37	34.35
Average daily butter-fat per cow	1.382	1.459

(The milk from cows fed sunflower ensilage was sampled and tested for flavor but no objectionable flavors or change in the milk could be detected.)

Many Colorado farmers have adopted the plan of using the corn and sunflowers together, having found that a better and more palatable product results than when either is used separately. Where corn can be grown, this practice is no doubt to be recommended. It is generally reported that the sunflowers go through the cutter more easily than corn and can be cut finer, consequently making feed that is more readily cleaned up. Although the heads and stalks of sunflowers are somewhat woody, they come from the silo in very succulent condition, and the entire plant is readily eaten.

Reports from other Rocky Mountain districts indicate that cattle sometimes must learn to eat the sunflower product, but having acquired a liking for it, will choose it in preference to other feeds. Some farmers report that in their initial experiments the stock seemed to need a little more hay than when corn silage was fed.

High Feeding Value

Analysis shows the feeding value of sunflower silage to be high. The following table shows the comparative analysis of sunflowers and corn:

	Sunflowers	Corn in Tassel	Corn Glazed
Dry Matter	12.24	14.9	26.2
Crude Protein	1.24	1.6	2.5
Crude Fiber	2.86	4.3	6.2
Nitrogen Free Extract	7.87	7.6	16.2
Ether Extract	0.37	0.3	0.6

G. S. Ray, an agent of the Colorado Experiment Station made a personal canvass among farmers in that State last year and reported that in every case those who had tried sunflowers were planning to plant a much larger acreage in 1919.

Only one variety has, so far, been recommended for silage purposes. It is known as the "Mammoth Russian." This is a single-stalked type having huge heads, which frequently measure 15 inches, and sometimes 20 inches in diameter. Usually each stalk bears but one flower head, although occasionally a plant is branched and carries two or more heads. This variety has been grown for many years for ornamental purposes and for the production of seed for poultry feed.

Yield of Fodder

The yield to be expected will depend upon a number of factors, such as soil fertility, moisture, climate and cultural methods. On good soil, under irrigation, sunflowers frequently produce from 20 to 40 tons of green material to the acre. This tonnage is considerably larger than can be obtained with corn under similar conditions. At the Nevada station sunflowers produced 23 tons of fodder to the acre, while corn grown in the same experiment yielded about 14 tons.

Soil Requirements

Sunflowers do not require an especially rich soil, but other factors being equal, the yield will be commensurate with the fertility. A good humus content is advisable but not absolutely necessary. The field should receive about the same preparation as for corn. The seed bed should be fine and well firmed. Under dry or semi-dry farming conditions, very careful preparation and cultivation of the soil—in fact, the practice of all of the usual moisture conservation methods, is essential.

Time to Plant

The time of sowing will depend somewhat upon weather conditions. When it is not desired to mature seed sunflowers may be sown as late as July 1 to 15th, and because of this fact are often used as a catch-crop, as in the case where a poor stand of corn is obtained. Earlier seeding is to be recommended, however, when possible, May and June being good months. In southwestern Russia, where sunflowers have been extensively grown for years, they are planted very early, for the purpose of maturing as much seed as possible. When planted late they will not, of course, make as much seed, and even if the plants are to be used only for silage, it is advisable to allow the heads to fill out. They grow so rapidly, however, that they may be planted very late and still make a good yield for silage. In sections of California not experiencing early killing frosts, sunflowers could undoubtedly be grown with profit, as a second crop, following early potatoes or grain, just as corn is grown. Being also a cultivated crop, they would serve a purpose in the soil-management scheme.

Growing Seed

When the sunflowers are raised for seed at high altitudes the planting should be done very early in the season to insure maturity. Twelve to fifteen inches is the best distance between plants in the row when seed production is desired. When the seed is mature, the heads should be cut and hung up to dry in a well-ventilated place. If the sunflower heads are piled before being thoroughly dry, they will mold badly and this will injure the vitality of the seed.

Method of Seeding

Various methods of seeding for a silage crop are practiced. Under irrigation, two methods have been tested: Seeding them in drill and in check rows at different distances. The former method has proved to be the more satisfactory. According to Montana experimenters, the most practical distance between rows has been found to be 24 to 30 inches, and the correct amount of seed, 12 to 16 pounds (about ½ bushel) per acre. If the drill is set to sow about 5 or 6 pecks of oats per acre, they report, it will be about right for sunflowers.

Either a drill or a corn planter may be used. If the grain drill is employed, a sufficient number of seed cups must be stopped up to provide the required distance between the rows. The most practical solution of

(Continued on Page 36)

Pithy Pointers

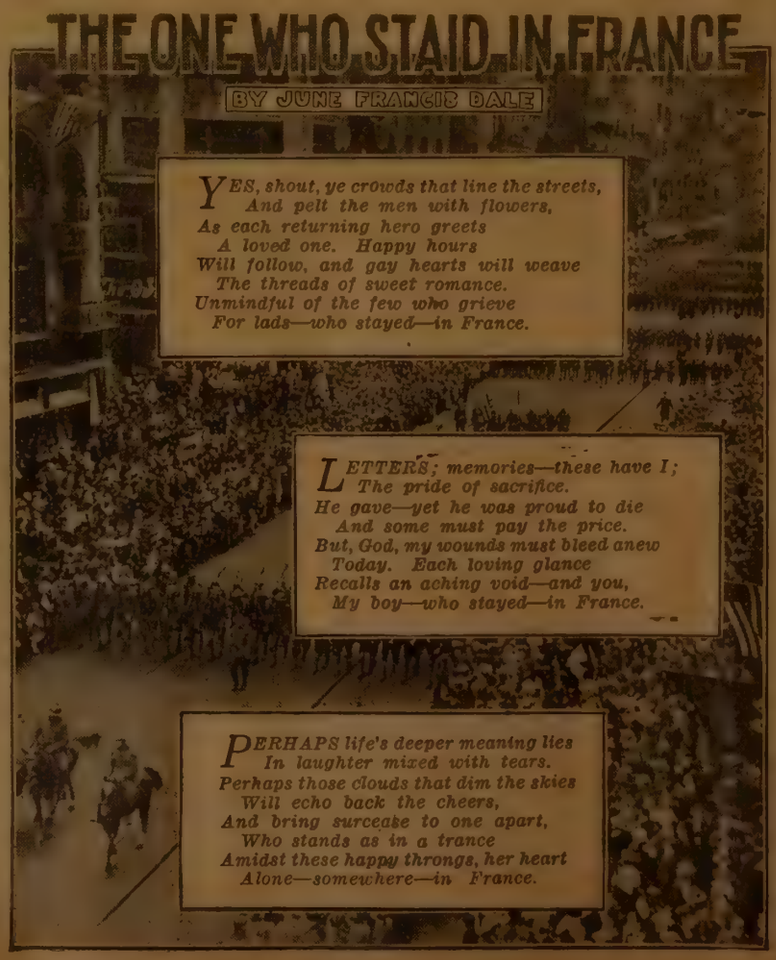
Many California farmers are planning to experiment with sunflowers this year.

Not only is sunflower silage superior for live stock, but the seeds are invaluable in any poultry ration.

Sunflowers offer interesting possibilities to farmers in the more elevated, semi-arid sections of the State.

This article tells the whole story: What, when, where, why and how much.

To obtain seed, patronize Orchard and Farm advertisers.



Better Fence Posts

Farmers are realizing more and more that a fence should be regarded as a permanent investment, freedom from repairs offsetting a slightly higher initial cost.

"CAN'T go to look over that property with you today," said my friend, Will Parlin, as I stopped about noon at his house. I had been after him for some time to cast his experienced eye over a promising looking "eighty" near my farm and he had agreed to give me his advice.

"But I'll tell you what I'll do," he added, seeing my disappointment. "I'll go over with you tomorrow morning sure. Bob and I are building fence and I have some steers coming that I want to put in the new pasture, so I'm anxious to finish it. If we get the posts up, the boys can string the wire in a short time. I only have about three-quarters of a mile to go. We ought to get them all set by tonight, and——"

"But hold on," I interrupted. "Did you say three-quarters of a mile? You have the holes all dug then?"

"No, but——"

"I say, are you kidding me, Will?" I asked. "I never heard yet of two men who could dig the holes and set three-quarters of a mile of posts in hard ground in half a day. What's the joke?"

"No holes to dig, Tom," he answered, with a twinkle in his eye. "These aren't that kind of posts. Here comes Bob with the team now. I'll show you something."

Then I learned the secret of his remarkable speed in fence-building. The posts in the wagon were of steel. And his equipment consisted of two heavy mallets, with which they were driven into the ground from the tail end of the wagon.

I was immediately interested, because if I should buy the new "eighty" I would have to fence it. "But the cost, Will. Didn't they set you back a tidy sum?"

"I have it figured out that they're cheaper than good cedar posts in the long run, and the first cost isn't more than a few cents higher at that. But they will certainly last almost forever. And look at the saving in labor! I figure that there is a saving of almost 10 cents a post in hauling and labor, besides the difference in wearing qualities. And they certainly look neat, don't you think?"

As I looked back along the line they had set I agreed at once on this point.

"The boys can start right away stringing the wire, too," continued Will. "They won't have to wait for the posts to settle and there will be no restretching. The wire can't pull loose, because there are no staples. It's easy to fasten the wire in place, and the first time is the last time. Then, too, we can burn the weeds along the fence line. Another advantage in countries where they are troubled with lightning is that the posts ground the current, so that it can't kill animals in the field. Of course, that doesn't worry us much in California, but it's a point in their favor. The salesman who sold me these showed me a letter from an Eastern farmer who had had some in for seventeen years, and he reported that they were almost as good as new."

"Well, it sure sounds reasonable, Will," I answered. "I believe you'll be through in time to drive over in the morning all right. By the way, look up the name of that agent and give it to me tomorrow. I might use some of them on the new farm—if we buy it."

Burbank's Secrets of Success

"LUCK" has never entered into the life of Luther Burbank as an important factor in his accomplishments. The only kind of luck he recognizes is the successful attainment that comes as the result of hard work and a display of real grit.

Luther Burbank at Seventy

Someone with the happy faculty of expressing big thoughts in few words has said that success is made up largely of two things: Hope and determination. These two attributes, especially if the latter be of the bull-dog variety, are guaranteed to accomplish more than the well known gentle trio, Faith, Hope and Charity.

The interview with Luther Burbank, master plant breeder of the world and contributor to Orchard and Farm, published in a recent number of this magazine, aroused much interest and comment. It dealt more with the commercial aspects of his work than with the man himself.

This month, however, we offer a few facts about his early struggles and the rules for living and working which have brought him success. There is inspiration for all in this brief story. His "Hope" included imagination and curiosity. His "Determination" carried with it intense interest and the ability to concentrate upon the hardest kind of work. Thus broadly interpreted, these two factors mark the road to great achievement.

Bitter disappointment and discouraging failures have marked his rise from an unknown, sickly New England lad to the greatest plant propagator of the world. Burbank, however, has never been a quitter; on the other hand, apparent failure has always served to strengthen his determination. He has been constantly driven by intense interest in his work, unswerving determination to succeed in his undertakings, and insatiable desire to discover or evolve new and better varieties of fruits, vegetables and ornamentals. And thus driven, he has worked ten, twelve, eighteen hours a day, devoting months and years to experiments which only his finely developed sense of values could have brought to perfection.

The very concentration of mind and purpose, which he describes as the basis for all real success, have resulted in so attuning his senses that he can immediately detect minute differences, shades of color, or variations of odor, which would be entirely indistinguishable to the ordinary human being. Just as a blind man, driven by necessity, develops his other senses far beyond the mark reached by the average person, he has, with his eyes open, attained the same result by concentration.

His Early Life

Burbank came to California in 1875 to regain his health after a long illness. He had previously worked in a plow factory, clerked in a store and done other odd jobs which sometimes netted him as much as 60 cents a day.

He had always displayed great interest in the phenomena of the plant world and after having spent a few months at Santa Rosa, where he earned a dollar here and there by doing all kinds of odd jobs, he finally secured a regular position in a nursery. Meanwhile he had sold his first real discovery, the Burbank potato, for $125. The millions of dollars' worth of this famous variety which have since been grown, alone belie the contentions of critics who accuse him of having commercialized his work. If Burbank had one-tenth the money which others have made as a result of his researches, his wealth would be fabulous.

But he has never been so much interested in the accumulation of money as in the successful fruition of his experiments. Most of his results have been attained by doing things which others thought impossible. He is said to have slept in the greenhouse where he was first employed in order to save up enough money to start in the nursery business himself. And after he acquired his nursery, he had to work 10 hours a day for another man and do his own work in the evenings. The second year his total sales amounted to about $200!

And He Did It!

Then opportunity knocked and he recognized the signal. Other nurserymen had been unable to fill a frantic order for 20,000 prune trees, to be delivered within 10 months. Burbank planted almonds in beds of sand, covered them with cloths and when they had sprouted removed them a few at a time to the nursery. He then secured enough buds from surrounding prune orchards to bud over the trees as rapidly as they attained sufficient growth, and in less than six months had delivered more than 19,000 young prune trees!

Mr. Burbank constantly finds association of ideas between the phenomena of the plant world and those of the human mind and body. In a recent interview Mr. Burbank referred to this incident of the prune trees, and said:

"In every plant and in every human being there are forces and powers of a range so wide, of a potentiality so great, that few people realize their full extent. One can take a plant strain and, by breaking up its inherited habits, guide it into a new and higher development. Even the despised weeds have this potentiality in them. They are weeds merely because at some time in their history they were starved, crowded, neglected, and had to adapt themselves to their surroundings in order to survive in a hostile world. But the possibility of developing into a higher form is still in the lowliest of them. In the human plant there lies this same power for growth and development, and the use we make of our possibilities depends almost solely upon ourselves."

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Raising Turkeys

A woman who understands them gives briefly some of the simple rules which she has followed with uniformly good results. There's a "knack" in raising turkeys.

A WEALTHY woman who owns considerable land once said that if she possessed my "secret" for raising turkeys, her fortune would be made. In reality, however, there is no "secret" about it; simply common sense. I will, however, give my methods for the benefit of other readers of Orchard and Farm.

First, and foremost: Give the hen with little ones plenty of coop room, and have the coop warm and dry with preferably a sand floor.

It is very easy to overfeed turkeys the first three weeks. Five times a day during this period feed a warm mash made up of wheat bran, green chopped onions, hard boiled egg (including shell) and red pepper. Feed in small quantities, keeping the turkeys hungry.

Always grease with clean fat the head and breast of each bird and also apply grease under the wings and tail. Do this every two weeks. It prevents infestation with vermin and gives the feathers gloss. After the birds are three weeks old, the egg and pepper can be left out except for one feed a week. I insist on green onions all the time, however, if it is possible to supply them. The mash is fed twice a day after this first period is passed, and whole wheat is given morning and evening. If the weather is cold and chilly, I frequently give them the warm mash at night. Lettuce or alfalfa may be fed green at any time. Never leave any old feed before the birds, old or young. Turkeys are very dainty eaters.

Corn or corn meal may be used to vary the grain diet. Although I did not have milk for my turkeys, I know of successful raisers who use it.—Mrs. M. A. Wood, Lankershim, Cal.

Lice on Turkeys

Four species of lice are commonly found on turkeys in this country. One of these, which occurs particularly on turkeys associated with chickens, is the common body louse of chickens. This species is not found in great numbers on turkeys, but it sometimes becomes sufficiently abundant to cause considerable irritation and doubtless is injurious both to the grown fowls and to the young.

The "shaft louse" of chickens also has been found on turkeys, but probably does not breed on that host. The other two species seem to be native to the turkey, probably existing on this fowl in the wild state.

The large turkey louse probably is most abundant. It occurs on the feathers on various parts of the body, especially on the neck and breast. The slender turkey louse is a species of good size, though rather elongate, resembling in shape the head louse of chickens.

Normally neither of these species is excessively abundant, but on crippled or unthrifty turkeys they may cause serious annoyance and undoubtedly they are injurous to poults.

The same methods used for control of chicken pests may be employed with turkeys. Young turkeys, however, should not be dipped in solutions, as they take cold very easily. Most turkey raisers prefer to use powders.

Turkeys on Island

An Imperial Valley turkey raiser, who is so fortunate as to possess an island in a large pond, keeps the turkeys on this island, where they have free range, yet cannot stray away, and where they are protected from rodent and predatory enemies.

Burning Questions in the Citrus Industry

Manuring, pruning, irrigation—these are subjects which are now paramount in the minds of the thousands of Californians who are engaged in the culture of citrus fruits. The writer of this article, who has recently been associated with Dr. C. E. Coit in the preparation of a book on citrus growing, and has devoted a number of years to close study of the industry, needs no introduction to most of our subscribers, having recently contributed a number of informative articles to Orchard and Farm. This month he continues a discussion of present-day citrus problems commenced in the May issue.

By Robert W. Hodgson

THERE is probably no single operation in the management of citrus orchards where inefficiency and waste are so manifest as in the handling of animal manures used for fertilizer. Any person accustomed to traveling by auto through the citrus sections at night is certain to recognize the stifling fumes of ammonia which arise from manure piles along the road, and from orchards recently manured. At certain seasons of the year when orchardists are fertilizing large acreages, the fumes are almost unbearable. Every trace of this ammonia present in the air represents a loss of valuable plant food—a loss which is largely preventable.

Better Use of Manure

And during the wet season who has not seen the tell-tale puddles of amber-colored liquid draining away from manure piles and down culverts and roadsides? Annual losses from winter leaching are of appalling magnitude, not to mention the enormous wastage due to the oxidizing power of the intensely hot, dry summer atmosphere experienced in the interior valleys. In fact, it is conservatively estimated that 50 per cent of the hundreds of thousands of dollars worth of manure annually applied to citrus orchards is absolutely lost so far as benefit to the trees is concerned.

Scientific investigations of the loss of nitrogen from manure applied broadcast to orchards even during the summer months when wastage from fermentation and leaching are at a minimum, have indicated that from 50 to 80 per cent of the nitrogen present in the fertilizer never reaches the soil. This tremendous loss is all the more important in view of the fact that at the present time manure supplies are running dangerously low and prices extremely high. One of the most important problems facing citrus growers at the present time is that of deriving the full benefit from manure applied as fertilizer. And that growers in general recognize this fact is evidenced by the intense interest with which they are discussing a recently revived method for the application of manure which is designed to prevent much of the present loss of fertilizer constituents. A particular modification ("furrow manuring," as it is called by Mr. A. D. Shamel who suggested it) is now especially receiving attention.

The great advantage of any method whereby manure is applied underground is of course that losses from fermentation and oxidation are largely prevented. Broadcast spreading too often it is not immediately followed by plowing and even if plowing is done, frequently it is not deep enough to put the manure beyond reach of the cultivating tools. Manure left in the cultivated area, in the mulch which is stirred following every irrigation, is largely lost by oxidation and is of practically no value for feeding roots. But not only does the practice of applying manure in a trench or furrow assure its assimilation by the roots; it also provides for concentration of the material in sufficient quantity to induce the growth of large masses of feeding roots in the furrows. With less effort, the tree is thus able to obtain more plant food than where manure is scattered broadcast and then turned under. And by preventing a large part of the loss so commonly experienced, such a method of course makes a given amount of manure go much further.

Furrowing and Trenching

What then, is the difference cited between the "furrow" system and "trenching?" The former is supposedly much cheaper, since the manure is applied in shallow furrows, eight to ten inches in depth made with one round of a turning plow, or a single time over with a lister plow. The efficiency of this system is presumably based upon Mr. Shamel's discovery that manure applied at such shallow depths rapidly sinks in the soil and that therefore this method of application does not induce that most undesirable condition of "surface feeding."

There are some points in favor of deeper furrows, however. The principal reason why "trenching" as a practice has never become popular is on account of the expense of digging the trenches, an operation which formerly was done largely by hand. Improved implements are now available, however, which make it possible to make a furrow 15 or 18 inches in depth at a comparatively low cost. Manure put down to such a depth as this is certain to induce deep feeding with all its desirable attendant features. Moreover, the deeper furrow gives opportunity for more manure to be crowded in. Thus possible heavier initial cost is offset by less frequent applications. For these reasons, as well as other minor considerations, many producers are now using the deep furrow method, and excellent results have followed its employment by certain growers during the past three years.

Citrus Grove Prepared for Irrigation

Scientific management of water is now regarded as one of the most important factors in successful citrus production, not only the yield but the thriftiness of the trees depending largely upon proper application of moisture.

Growers quite generally are discussing some data recently presented by Mr. Shamel relative to the effects on yield of pruning as contrasted with lack of pruning over a five year period. These data, which summarize the results of the pruning done by five different growers show rather conclusively that in the experiment in question the unpruned trees have consistently outyielded the pruned trees and that it has been a loss of time and money to prune the trees at all. The inference conveyed to the average citrus grower from the report of this experiment is that it does not pay to prune bearing Washington navel trees.

Pruning vs. "Butchering"

From the illustrations showing the condition of the trees after pruning, as well as the amount of wood removed, and also from a personal inspection of trees similarly treated by some of the same pruners, the writer is forced to believe that this conclusion is not justified from the data presented. In fact, he does not feel like dignifying the treatment given these trees by calling it pruning. More properly, it should be termed "butchering."

It is a well-established fact known to all students of plant physiology that pruning of any sort of tree is weakening to the extent that by reducing the food supply the growth which would normally have occurred is decreased. In some cases, to be sure, weakening of vegetative growth is exactly what is desired, but in most instances this is by no means the prime object of pruning. But pruning at certain times of the year and with different classes of plants varies considerably in its weakening effects. Thus, summer pruning of deciduous fruit trees is very enervating. With evergreens such as citrus, pruning at any season is decidedly weakening, the effect being in direct proportion to the amount of growth taken off. **A citrus tree can be starved to death by severe pruning more quickly than by neglect in fertilizing.** It appears to the writer that the pruned trees in the experiment in question had every reason to bear less fruit. Not only were they outraged by butchering, but they did not have the bearing wood or energy left to come back.

Judicious Pruning Advisable

These results, however, are no argument in favor of elimination of pruning; as in many other situations, good results depend upon moderation. We know that there are certain types of growth commonly found in our navel trees which are not desirable and should be excluded. Some are merely undesirable structurally speaking, while others carry decidedly inferior heritable characteristics. We also know that if left to themselves, our navel trees become so dense and thick as to exclude all light from the interior and consequently fail to bear inside fruit as well as developing a large amount of dead brush. We know that this condition can be remedied by judicious pruning. Altogether, the writer is as yet unconvinced that a judicious use of the saw and pruning shear in the navel tree is not a desirable thing.

Another criticism offered in connection with the experiment in question is that the trees, in order to furnish thoroughly satisfactory data, should all be of exactly the same parentage and carry exactly similar heritable characteristics. It is practically impossible anywhere to select a block of one hundred navel trees which conform to this requirement. The navel variety varies so much as to individuals, and presents so many mutant strains that in experimental pruning plots each tree should represent a bud taken from the most constant and uniform tree to be found. Then, and then only, will the data obtained be of any considerable value.

In this connection, it is interesting to consider some of the differences in pruning between the Valencia and the navel. In the first place, heritable variations are much more rare in this variety than in the navel. There are apparently only two distinct strains, the long and the round fruited types, and these may possibly trace their origin to two distinct importations years ago. In the same period that the navel variety has been breaking up into a dozen or more readily recognized strains, the Valencia has remained apparently the same as it was when introduced. Then, too, there are only two distinct kinds of growth in the Valencia; slow-growing fruit wood and rank upright growing suckers, and both undoubtedly carry exactly the same heritable characteristics. One need not be so hesitant in using vigorous growing Valencia bud wood as similar navel wood. The chances of deterioration are very much less.

Pruning the Valencia

Tall Trees More Expensive

This vigorous upright growth is not, however, desirable in a Valencia tree. It is structurally weak and if not removed, ultimately will necessitate propping or wiring in order to prevent the tree from actually breaking to pieces. Moreover, trees formed from this kind of growth are large and unwieldy and do not carry fruit in proportion to their size. It costs more to raise fruit on a tall, "scraggly" tree than on a smaller, more compact one. Practically all orchard operations, such as fumigation, spraying and picking cost more with large trees; propping and wiring also are expensive.

For these reasons, and others, a number of progressive growers have adopted a system of pruning the Valencia, and especially the younger trees, which has for its basic principle rigorous exclusion of all strong growing vegetative wood. The tree is forced to form from the slower growing, structurally stronger, and in every way more desirable growth. The trees do not size up as rapidly as do unpruned trees, nor do they bear as much fruit for the first few years; it is felt, however, that at ten or twelve years of age, they will bear equal amounts of fruit which will represent much less expense. One large company is so thoroughly converted to this system that they are using it on all the younger orchards up to seven or eight years of age, with especial attention to the younger trees.

The rainfall has been deficient during the past winter. And not only was it below normal, but it came

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Millions for California Grape Growers

Our subscribers will no doubt recall Mr. Husmann's startling account of his work with the Panariti raisin grape, published exclusively by Orchard and Farm last fall. Many readers have since secured cuttings and are engaged in bringing about his prediction that it would soon be worth hundreds of thousands of dollars to California. In this article he not only gives more detailed information about the Panariti, but describes other varieties now being successfully grown which likewise give promise of tremendous commercial possibilities. We consider this article one of the most interesting and important it has been our privilege to publish for many months, and we trust that every fruit grower will read it carefully. Those desiring further information or cuttings should correspond directly with the author, addressing Geo. C. Husmann, Pomologist in Charge of Viticultural Investigations, United States Department of Agriculture, Washington, D. C. Mr. Husmann is himself a California vineyard owner and has conducted most of the experiments here described at the Department's local vineyards.—The Editor.

By George C. Husmann

United States Department of Agriculture

DEEP-SEATED convictions are not easily dispelled. It was not until experiments showed the fallacy of the idea that pruning would kill the ordinary Rotundifolia varieties of grapes grown in the South Atlantic and Gulf States, that many residents of those regions would believe otherwise. Some of the vines used in the experiments received their first pruning at the age of 50 years, and by this means were restored to complete vigor and fruitfulness. My experiments, extending over a period of several years, not only showed that pruning improved the quality of the fruit, but also demonstrated that it could be made to ripen in clusters.

These varieties were developed by the pioneers of the Atlantic coast, through improvement of the native grapes, after they had made futile attempts to propagate the vinifera they had brought with them from Europe. They did not know that their failures were due to the presence of the Phylloxera vestatrix, or root-louse of the vine.

About this same time, the Mission Fathers were founding their schools in California, and, in addition to introducing to this country the culture of the olive and fig, demonstrated that California was a congenial home for vinifera grapes. They grew only one variety, the Mission (a true vinifera), which was for many years the most important grape grown in this State and is at present cultivated to some extent in certain districts.

Similarly, in the South Atlantic and Gulf States, the growing of the Rotundifolia continues in the embryonic state, simply because these vines grow and fruit with little or no care and are resistant to Phylloxera, even making a brave stand against rot.

When grape breeding work was begun with Rotundifolia, the vines of this species were thought to consist of either (1) fruiting vines that were practically self-sterile or (2) plants producing flowers having both stamens and pistils in which the female organs were capable of producing fruit, if fertilized by pollen from male or staminate vines. In less than a decade, we produced self-fertile strains, from which a considerable progeny of self-fertile vines has since been grown. This fact in itself makes possible the revolutionizing of the Rotundifolia grape industry by putting it on a self-fertile basis.

The present viticultural industry in the vinifera regions of the United States now represents an investment of at least $300,000,000, gives employment to 15,000 persons and yields an income of more than $50,000,000 per annum.

In these vinifera regions the earlier activities were almost exclusively devoted to the growing of wine grapes and although introductions of all the choicer vinifera varieties were made early in the last half of the last century, including raisin, table and shipping varieties, it was not until 1873 that raisin crops became an important factor in the market, the entire output that year amounting to 6000 boxes. Since then the industry has grown so that last year the enormous quantity of 33,000,000 pounds of raisins was cured, and about 25 per cent of these exported.

Eighteen years ago when Phylloxera, the so-called California vine disease, and other agencies threatened to wipe out the entire vinifera grape industry, the United States Department of Agriculture came to the rescue and began broad viticultural research work. This led up to a number of special investigations, some of which have taken us into entirely unexpected by-ways so that we are now starting some important new grape industries.

One of the important lines of work in the viticultural investigations of the Department has been the introduction from various parts of the world, and testing of new grape varieties and the ascertaining of their value and usefulness for diverse purposes in this country.

The first grape variety that reached the Department after I became connected with it was the Panariti (S. P. I. No. 6429), one of the varieties from which the currants of commerce are produced. In the currant grapes, three colors; white, red and dark are found.

Corinthe grape experiments have been conducted with Corinthe blanc, Corinthe rose, Black Corinthe and the Panariti varieties. Of these the Black Corinthe has proven worthless. No one appears to have had any particular trouble in fruiting the Corinthe blanc and Corinthe rose, but their fruit is inferior in quality, both fresh and dried, as compared to the Panariti, for which reason special researches were made with this variety.

Our first introduction to the Panariti was when we received a package containing a medley of old and young wood, of miscellaneous lengths, thrown loosely without packing into a roughly-sealed wooden box and arriving in a somewhat dry condition. The one year old wood was made into cuttings and a distribution made of a portion of these to grape growers who were known to be interested in experimenting. This accounts for the occasional plantings of it in California.

It may interest the reader to know that some of the cuttings were used in an experiment to ascertain how long cuttings could be immersed in hot water of different degrees of temperature without killing them. A portion of these immersed cuttings were afterwards planted in a nursery in the usual manner and a portion of them cut into one-eyed cuttings, placed in sand in greenhouse and given bottom heat. The results showed that those immersed ten minutes in water brought to 53 degrees C or 127 degrees F, were left in better condition than those immersed only five minutes at the same temperature. By immersing them five minutes at 56 degrees C or 133 degrees F best results were obtained, whereas at 60 degrees C or 140 degrees F an immersion of only five minutes was not only injurious, but is usually fatal to the cuttings.

The resistent stocks so far found most congenial to the Panariti are Rupestris St. George, Aramon x Rupestris Ganzin No. 1, Riparia x Rupestris No. 3309, Mourvedre x Rupestris No. 1202, Adobe Giant, Riparia Gloire, Dog Ridge, Taylor Narbonne, Lenoir, Salt Creek and Solonis x Riparia No. 1616, in the order named. Beside these there are a number of others on which it does well. This variety also readily adjusts itself to different pruning methods and training systems.

When the vines under test had fruited several seasons it was found that one good crop of fair fruit might be obtained from the Panariti, but that this was exceptional and could not be depended upon.

The literature on the currant grapes shows that incising the vines is practiced by the growers in the currant-producing countries, but how and when this is done is not mentioned; neither were the Department's agricultural explorers able to extract any real information on this subject from foreign growers.

The fact that occasional crops were produced without incising puzzled us. We really secured decided results by incising before we knew it, and it required six years of close study and experimentation before we determined that in order to get regular annual crops, not only must the vine be incised annually, but this must be done while the vines are in bloom. Incising not only increases the output very greatly but improves the size, quality and quantity of fruit.

[Incising as explained by Mr. Husmann in a previous article in Orchard and Farm, consists in making two parallel cuts through the bark and cambium layer, around either the trunk, arm or canes of the vine and completely removing the strip of material between the two parallel cuts. This must be thoroughly and completely done; otherwise best results are not secured.—Ed.]

Incising does not prevent the main upward flow of the sap, but does act as a barrier on the returning down-

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The Sacramento Demonstration

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will be prepared to take the prospective buyer in an automobile or bus to a distant allotment of ground, where drivers will be on hand with one or more representative tractors of that make, to do any kind of field work in any amount that the salesman and "prospect" order. The drivers, moreover, will have a sufficiently large allotment of ground to demonstrate thoroughly what the machine can do under actual field conditions. This plan should result in more sales, more satisfied visitors of all classes, less confusion, and a more representative showing of the different entries.

On a 600-acre tract each company could have a very large allotment for these private demonstrations, while the unnecessary waste of space and effort resulting from spreading the individual exhibits all over a dusty field could be eliminated. While each exhibitor might, possibly, require a little more equipment, he would gain in the long run through pleasing both the casual visitor and the interested "prospect," and would have much more of an opportunity to close sales than if he depended upon a casual visitation at his isolated corner of the field by a foot-weary, dust-laden, tired and confused "fan" who wanted to see all the makes before making a decision and who had worn himself out before the end of the first day.

Competitive field work, too, tends to add to the general discomfort. A vote among the visitors, whether prospective buyers or otherwise, would undoubtedly favor the elimination of all competitive features. If the members of the association desired, either before or after the public demonstration, to conduct a series of tests and contests for their own information and the advancement of engineering science, such contests would be entirely permissible and of great value. But the public, we believe, would be more interested in reading about the results of such contests than in witnessing them.

The demonstration and the contest, while they may be held at the same meet, must be absolutely divorced if satisfactory attendance and large sales are to be expected at future shows. The visitor can very quickly make comparisons from a close-up view of various makes at work on short jobs, and prefers to spend the remainder of his time making a closer study of the particular machines in which he is most interested. But he rightfully demands an opportunity to make comparisons and sift down the entries to those which do interest him, without covering a section of land and undergoing serious physical discomfort.

Four furrows should be enough for each machine to turn each day on the general demonstration field. Allowing five days for these comparative "drills," it will be seen that the general show could be staged, even with a great many entries, on a comparatively small field. By devoting the mornings to this work, starting not more than four or five machines at a time, it would be possible to give comparative exhibitions of all entries before noon, and the afternoon could be devoted by the exhibitors to selling. Those visitors who did not desire further demonstrations by certain machines could devote the rest of the day to inspection of the "still" exhibits, attendance at lectures, and appreciation of other features confined to a comparatively small area. With the "streets" of the central grounds sprinkled and rolled, and with a rough grandstand erected along the main demonstration field for the accommodation of those who did not desire to follow the plows, visitors would feel pleased with their treatment and would not only wish to return the following day, but would become "boosters" for the show and the tractor industry in general. —J. C. K.

"I Wish I Knew More About Bee-Keeping"

There is nothing mysterious about it, but there is much to be learned. Here are the answers to your unasked questions. Whether you are interested in the possibilities for commercial production, or have thought of keeping a few bees as a side line, or merely want to inform yourself upon a subject which you have always regarded with curiosity, you will find much of interest in this enlightening article. For here a practical bee man of broad experience discusses the ins and outs and the dos and don'ts of honey production.

By O. H. Barnhill

AN ANNUAL production of 100,000 tons of the most wholesome and palatable of all sweets, worth $20,000,000, represents the extent of the bee business in the United States. The recent shortage of sugar has served to call our attention especially to this interesting branch of agriculture. It is usually carried on in connection with some other line of farming, but there are hundreds of professional beekeepers in all parts of the country who make honey production their exclusive business.

One of these, James Hersey, pastures over 400 colonies of bees in Northern California, almost in the shadow of Mt. Shasta, one of the world's greatest peaks. Last year Hersey made so much money with his industrious insects that he refuses to give the exact figures, fearing that the publication of this information would result in the overstocking of his range. He sells about $2000 worth of honey during an average year, but last year over $6000 worth of extracted honey alone was disposed of, a double yield and top-notch prices being secured.

Prerequisites for Beekeepers

"Apiculture is overdone in some sections," said Mr. Hersey, "yet in others there are splendid opportunities, offering light, lucrative employment to those who are naturally suited to the work. Anyone who thinks of making a business of beekeeping should first size himself up and see if he is adapted to this fascinating pursuit, for successful beemen, like poets, are born, not made. Here is a questionnaire for those who contemplate drafting themselves into the army of apiarists:

"Do you like to cut and 'slash' and force things through by main strength and awkwardness, or are you patient, plodding, painstaking and persevering?

"Do visions of vast herds of cattle grazing on a thousand hills delight your imagination and does the clatter of mowing machines, the hum of binders and the roar of a thresher seem music to your ears? Or do you like intensive rather than extensive farming, taking for your motto, Not how much, but how well?

"Which do you prefer, doing field work with team and tractor, or puttering around the house and garden?

"Do you despise details and little things, or are you a nature lover, interested in even the tiniest of God's creatures; kind and careful, orderly and methodical?

"If you can return satisfactory answers to the foregoing questions you will probably make an acceptable and successful apiarist, your measure of success depending entirely upon your industry and exercise of judgment. Your temperamental qualifications should be very much the same as those required of a horticulturist or a poultryman. If you have made good in either of these professions your chance of success with bees will be greatly enhanced. Industry and good business ability are necessary in this as in all other money-making enterprises.

How Much Money to Start?

"The amount of capital required depends upon whether you wish to go or grow into the business. If the latter, you need only the price of a hive of bees and a few tools and supplies, say $10 to $20. As your experience accumulates you can enlarge your holdings until you have all the bees you can comfortably handle. If you want to go into the business on a large scale as soon as possible there is only one thing to do—work for an experienced and successful beekeeper at least one year, studying meanwhile all the bee books, magazines and catalogs your system can assimilate. Some beginners appear to gather more practical facts from the catalogs of dealers in bee supplies than from any other source.

"But don't, I beg of you, don't be carried away by stories of the present princely profits being made in the bee business because of the high price of sweets and foolishly rush in where experienced apiarists fear to tread, investing all your capital in high-priced stock and equipment. If you do you will get in over your boot tops and soon find yourself stuck fast in a great gob of chunk honey, with dead and dying bees all around, unable to move hand or foot for lack of reserve capital. A similar plight overtakes many people who are lured by paper profits into the fruit or poultry business, the true essentials of which they learn only by costly experience. The latter is then all they have left to show for years of hard work and they are unable to make use of the knowledge thus gained because all their capital was used up in learning the business. Better pocket your pride and be willing to work for and learn of others, sitting for awhile at the feet of one who has found the road to success in your chosen profession.

What to Buy

"Colonies can be started by putting a two-pound package of bees (about 6000) into each empty hive. These packages are shipped by mail from Southern breeders and cost $2 to $3 each. Half as much more is charged for a queen, one of which should, of course, be placed in each hive. Considerably higher prices are charged for the very best stock. If obtained early in the season and properly cared for, these small colonies will multiply to such an extent that by the time the main honey crop is ready to gather each hive will contain an adequate number of workers.

"The best plan for beginners, however, is to buy hives of bees, for this will give you a running start with a going concern, and you will have plenty to do to keep it going. At the present time a first-class hive of bees will cost from $6 to $10. I value mine at the latter figure. Most of them were purchased at the beginning of the war at $4 each, but at that time honey was selling at 7 cents a pound, less than one-third the present price.

"Don't buy bees without the advice of an expert in whose integrity and good judgment you have the fullest confidence. If you do you are apt to get stung in the place where it hurts most—in the pocketbook. You may obtain weak, diseased stock in out-of-date hives and crooked frames. It will not pay a novice to buy anything but strong, healthy bees in hives of the most improved pattern, with frames and everything else in perfect condition.

"Be sure to get pure-bred or high-grade Italian bees. Scrub stock is costly at any price. What cholera is to hogs, foul brood is to bees. Be very certain that there is no trace of this dread disease in the hives you buy or in those within two or three miles of your apiaries. The number of colonies which should be purchased will depend entirely upon your capital stock of money, ability and experience, as well as the pasturage available. The danger, however, lies in making too ambitious a beginning rather than the other extreme.

Where to Locate Hives

"An ideal location for an apiary is a sunny, southeastern slope with trees on the north for protection against winter winds and a little shade of some kind during the summer. Most of my apiaries are surrounded by sage and other brush and scattering juniper trees. Near-by alfalfa fields are the chief source of nectar. The fall flow from yellow sage is saved for winter feeding; it is too dark-colored to sell well for table use.

"White sage makes the finest of honey, but this kind of brush is confined mostly to Arizona and Southern California. White clover is another ideal honey plant, but few bees have a proboscis of sufficient length to extract the nectar from red clover. Alfalfa is the leading honey plant in the western half of the United States. It is a curious fact that honey made from alfalfa in the Imperial Valley, which is located partly in the United States and partly in Mexico, is quite dark in color, while alfalfa honey here in Northern California is light amber, and in Washington and Idaho is nearly white. Basswood and buckwheat are two great sources of honey. Hundreds of other trees and plants produce nectar in profitable quantities.

"Where an apiary is located on private property, even temporarily, the owner's consent should first be obtained. Rarely is any charge made for the pasturage of bees, but it is

(Continued on Page 32)

Baptism of Fire Destroys Pests

Apparently the only virtue which can be accorded some of the diabolical methods employed during the world war is the fact that they have inspired new and improved systems of eradicating the insect and rodent enemies of the agriculturist. "Gassing" gophers is now a popular pastime. The latest development in pest control involves the use of "liquid fire."

By G. R. Gorton

Horticultural Commissioner San Diego County

EVEN at his notoriously slow pace, a snail may arrive in a comparatively short time at a state of being a serious pest. In the early fall of last year the writer's attention was directed to an area in La Jolla, about fourteen miles from San Diego, where a resident naturalist had observed large numbers of the snail, Helix Pisana, on the native vegetation. A thorough inspection of the infested area was made, and it was found to be limited in extent to a small canyon adjacent to the ocean and approximately three city blocks in length.

The location of the infestation is most fortunate as regards the possibility of eradication, inasmuch as La Jolla is given up to residences, resort hotels, etc., and it is miles to any commercially planted area which would be endangered by the presence of this pest. Then, too, the fact that the infested plants are almost entirely native growth facilitates the method of eradication which we have adopted.

Great Numbers Present

An idea of the enormous number of snails which were observed upon the first inspections may be obtained from the fact that one Encelia Californica approximately two feet in height and thirty inches in diameter was found to have nearly eight hundred snails clustered upon it. It is, by the way, typical of the habit of Helix Pisana to feed first upon the native growth as long as there is any, and the preference so far observed seems to be for such plants as Encelia Californica,

(Continued on Page 27)

Killing Helix Pisana

Above—Heavy infestations of snails on native vegetation; more than 800 on one bush.

Below — Commissioner Gorton and assistant operating the liquid fire apparatus.

Odd Jobs for the Farm Tractor

A Sacramento County farmer tells how he makes his tractor earn bigger profits by keeping it at work on odd jobs when it is not being used in the fields.

TAKING the pigs for a ride and pulling stumps are two of the everyday tasks that our tractor performs willingly.

Startling, but true. Nothing unusual about pulling the stumps, perhaps, unless it might be the profits that we have made by the operation, but as for taking the pigs for a ride, that undoubtedly calls for an explanation.

We have a movable hoghouse and pen. The house is "A" shape and built upon runners. We use it for the purpose of moving our pigs about on the ranch to the different spots of Bermuda grass, which with us is a decided pest. A sow and pigs are the best Bermuda destroyers we have found; they soon grub it out completely. The tractor furnishes the motive power for moving. The pigs are chased into the house, the door securely fastened, the tractor hitched on and away we go to the next stop. When Madame Sow and her offspring come out of their house again, they always seem to have a peculiar expression in their eyes, an expression of surprise, mingled with inquisitiveness!

Also Death on Stumps

Last year we were clearing some stump-land. Believing that the tractor could do anything, from washing the dishes to rocking the baby to sleep (as per the agent), we hitched up to a good-sized stump. The big stump proved to be the best puller and buried the engine without honors. It took a half day to dig it out, but—believing in the old saying of "try, try again"—we gave the tractor an opportunity to retrieve itself and found that it could, with the right equipment, pull the stumps. We pulled the smaller ones, about 18 inches in circumference, using a plain cable, with no more difficulty than a dentist has in pulling teeth.

In 1918, even with the high cost of labor, it was proved on this ranch, here in the "Natomas" land, that it paid to remove the stumps. The land was cleared at a cost of about $60 an acre for pulling, cleaning off, piling up and burning the stumps, filling the holes and raking up and burning the trash. The last of September we planted carrot seed. The seed germinated quickly and grew very rapidly until the cold weather set in. The winter was unusually cold and the roots made comparatively little development, yet in February, when they were dug, it was found that they had produced enough to pay for the clearing of the land upon which they were planted.

Cost of Clearing Trees

Those who have trees on their land instead of stumps can, in many cases, clear it at about half the cost involved when there are only stumps or slashed timber, as the trees produce enough wood to pay for half of the clearing.

In several instances, on Sacramento County lands, it was found that newly cleared land would produce an average of 12 sacks to the acre of Lady Washington beans the first year. The first or second year will not prove the actual productive value of the land, however, as the soil is raw and cannot be worked enough. The third year usually shows about what productive value the new land possesses. In every case we have observed, however, land that was freshly cleared and planted paid for the clearing the first year, and usually land which has produced an abundant growth of wild timber proves to be productive under cultivation.

Yes, we regard our tractor as a sort of jack-of-all-trades. It "shines" at sawing wood. Three men sawed 20 cords a day with the tractor and a circular saw. Now we are wondering if there isn't some way that we can split wood with it?—W. Temple, Sacramento, Cal.

(Editor's Note—A successful wood-splitting machine has already been developed. So far as we know, however, it is not on the general market.)

This Stump Land

Was cleared by means of the tractor and produced the first year the crop of roots shown in the lower illustration, which more than paid the cost of clearing.

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"OLD FAITHFUL" is all that its name implies—built to serve every man. Cut generously throughout to permit great freedom of action — triple stitched on all strain seams—reinforced—two unusually large pockets with buttoned-down flaps, just where you can reach them easily.

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Yet the Elcar is even a better car than it looks to be. It has a wonderful motor that's powerful, speedy, flexible, easily handled. Driving is a real pleasure.

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The Tractor Demonstration

(Continued from Page 3)

afterwards may be traced indirectly to the exhibition.

The Educational Feature

The interest of the visitors in the lectures manifested the general desire to learn. Able lecturers gave valuable talks not only on such topics as lubrication, ignition and carburetion, but also on other phases of agriculture, such as tillage, soil management and general farm mechanics. Tractor schools always draw crowds. There is a great demand for skilled tractor men. The return of service men who have dealt with the most advanced types of gas engines for months and have handled tanks, airplanes, motor trucks and automobiles under the most trying conditions during the war will undoubtedly exert also a favorable influence on the tractor business, for there will be less of a dearth of skilled drivers and mechanics and better service to owners is sure to result. That wonderful opportunities still exist in all mechanical branches of the tractor industry, however, cannot be denied. The increased attendance at tractor schools, both private and public, and the great interest manifest in all phases of tractor operation among grammar and high school lads are proof of the public enthusiasm. Recent figures show that more than 132,600 tractors were made in the United States during 1918, and it is predicted by conservative authorities that more than 315,000 will be made in 1919. It would seem, then, that not even existing tractor schools, already crowded, will be able to supply the demand for experienced mechanicians and drivers.

State School Proposed

Some dealers have emphasized other points in favor of tractor education. They have even gone so far as to propose a State "school" or license board which shall examine and license manufacturers of and dealers in farm tractors and machinery. This, it is believed, would result in protecting both the scrupulous dealers and the public. One of the largest dealers in the State, handling a machine of eastern make, in discussing recently the proposed legislation, said:

"Such a law, if adopted and passed, would prove of great benefit to more than the average farmer. It is quite well conceded, we take it, that many an owner of land in this State is persuaded to buy a tractor which at the time, is shown by the salesman, to be just the thing or a big saver of time, horsepower and manual labor, whereas the question of the responsibility of either the manufacturer or dealer and his so-called 'guarantee' is overlooked.

"There are many honest, reliable and trustworthy manufacturers located in California and the East who are offering tractors of reliability and whose representatives do not make statements which are unwarranted or at variance with the truth.

"These statements can be credited; moreover, the interest of such dealers does not cease when a sale has been made. Many progressive dealers have service men who follow up each sale as made and see that the buyer of the tractor is fully instructed in driving, knows how properly to oil the machine, can tell when the bearings need adjusting and knows the proper hitch for the different implements.

"A permanent tractor school for the education of the farmers and users of tractors in California has been advocated. That such a school would be of vast benefit is shown by the uniformly large attendance at the 'short courses' that have been held in this State. An added appropriation for carrying this work still further has been asked by the State Board of Education."

Unquestionably the vistors, present primarily to learn, take a tractor demonstration very seriously. In order for it to be a complete success, the exhibitors must not only study and meet the desires of the public, but also undertake their task with an equal seriousness, making business-like and early preparations and anticipating all possible exigencies.

"The 1919 Sacramento demonstration will go down in history as one of the largest, most comprehensive, and most educational shows of its kind ever held," said one visitor who has attended many such exhibitions. Nobody can deny that it was a success, so far as the enterprising association is concerned. They have shown again the value of co-operative salesmanship, and unquestionably are big enough to see and remedy such faults as the present system of public demonstrations has developed.

Demonstration Notes

Several new plows were exhibited, among them special vineyard plows designed to work up close to the rows. More special equipment was shown than at any previous demonstration.

One of the new type threshing machines successfully "chewed up" two-inch oak boards for the edification of interested spectators.

Some of the smaller machines demonstrated that greater plowing speed is entirely feasible with the right kind of equipment.

Most of the larger manufacturers exhibited a series of different models, designed to meet varying needs and conditions.

Great interest was shown in the use of large and small power levelers, subsoilers, chisels and other special machinery, much of it made in California to meet California conditions.

The great banquet held Tuesday evening, May 6th, was attended by nearly 500 members and their friends. It was noticeable that many of the tractors negotiated very unsteady courses the next morning, this situation being due, no doubt, to the loss of sleep suffered by some of the drivers.

Many big men in the industry journeyed from the East to be present. These included officials of implement manufacturing concerns, as well as leading tractor manufacturers, many of whom have come to regard their Pacific Coast branches as the most important on their lists.

"Greater production, not legislation, will hold down the high cost of living," said one eastern manufacturer, "and the use of tractors will enable the farmers to bring about the needed increase in production without experiencing the loss that would result under old methods of farming."

A change was noticeable in the attitude of the visitors, as compared with previous demonstrations. They were disposed to study and inquire about mechanical details as well as performance records. This was construed to mean that the lessons taugh in the tractor schools were not learned in vain, and far-seeing dealers recognize the fact that they must, in many cases, deal with men already well posted on the finer points of "tractioneering."

How to Babbit a Bearing

Many jobs which usually go to the machine shop can be done right on the ranch. If you follow these simple instructions you can easily babbit any plain bearing. The Orchard and Farm camera-man took the "movie" illustrating the different steps in the process at the shops of the National Automotive School, Los Angeles, and we are indebted to Harry Sharpe, chief mechanical instructor of that institution, for the following clear and concise instructions:

THE first requisite in "pouring" a bearing is to have a suitable grade of babbit. If the old babbit can be saved, it will, as a rule, be suitable for use, and if more is needed, it can be obtained at nearly any garage or machine shop.

Care must be exercised in using old babbit metal as it is sometimes "fouled" with lead or solder or is

(1) Center Crankshaft Bearing Burned Out.

useless because of having been burned.

Thoroughly clean the box which is to be poured, taking out all the old babbit. Then wrap a thin piece of paper on the shaft, or apply a coat of chalk in order to give it a small amount of clearance and prevent sticking.

Now, place the shaft in the position it will take when running, being careful to get it level or perpendicular, as the case may be. If the bearing is in two parts, place a number of metal or cardboard shims between the bottom and top half of the box and cut a small notch on each shim next to the shaft so the molten metal can run into the bottom of the

(2) Applying the Putty Before Pouring.

box. Let the shims come within one sixteenth inch of the shaft, leaving only a small film of metal to be cut in order to get the top of the bearing off for finishing.

Shaft Must Be Heated

The shaft and box should both be heated with a blow torch until they feel warm to the hand, as the babbit, if chilled by contact with cold metal, will not cover the entire surface of the bearing.

After these preparations have been made the edges and sides of the box must be closed with some substance to keep the heated metal from running out. Putty, fire clay, stiff mud, or plaster of paris are usually employed for this purpose. Putty is the easiest to use and answers the purpose if the weight of metal is not too great, but it will not hold the metal on a large bearing. For general use, stiff mud or plaster paris will fulfill all requirements.

At the highest point leave a vent in order that the air can pass out and allow the entire box to fill with babbit. Place a small circle of putty around the point at which you have chosen to pour the babbit (which as a general rule will be the oil hole) and there will then be a small "funnel" to carry the metal into the bearing.

Pour All at One Time

Heat the babbit in a ladle that will hold enough to pour the entire bearing at one time. Never try to pour the bearing in two parts as the metal will not seal together and will immediately crack. The babbit should be heated to a point where it will just blacken a stick, but never hotter. If it will ignite a stick it is burned and will be unfit for use, as it will form a powder and become hard. This will cut the shaft and cause a great deal of trouble.

Before pouring the metal be sure there is no water in the box, as a small amount of water will result in

(3) Pouring the Molten Babbit Metal.

an explosion, caused from the steam generated by the hot metal which might result in a serious accident.

Pour the metal into the prepared box and allow it to cool thoroughly. After the bearing is cool, take out the shaft, if possible, and with a scraper dress the surface to a smooth finish.

When the bearing is in two parts, crack off the cap or saw it through with a hack saw and file the babbit down level with the edges of the box and cap.

Scrape the bottom half of the bearing with a scraper until it lines with the other bearings on the shaft.

Testing Alignment

The method used to find how the

(4) Filing Down the Edges After Cooling.

bearing is seating is to coat the shaft lightly with prussian (now, I suppose, "Liberty") blue and roll it in the bear-

ing in operating position. Then scrape off the blue spots on the bearing and try the shaft again. This should be repeated until the whole surface of babbit assumes a blue color at one time, which will show that the shaft is sitting on all parts of the bearing.

Fit the cap in the same manner and after assuring yourself that the shaft is touching the cap the same as the bottom half of the bearing did, cut shims of metal and place them between the cap and bottom, drawing the bolts down tightly.

There must be enough shims so the bearing will not seat too tightly when the bolts are drawn down, as the bolts must never be loose.

Allow for Expansion

It is a good plan always to file or scrape the cap and the bottom bearing off on the edges next to the joint in order to leave room for expansion. Cut them back about one-sixteenth inch and taper this cut down for one-quarter of an inch. Then cut grooves about one-sixteenth inch deep for the oil to run in so that it will be distributed over the entire surface of the babbit on both top and bottom.

The grooves should start at the

(5) Scraping the Bearing for Adjustment.

oil hole and run each way to within one-quarter inch of the edge of the bearing.

If your bearing comes out with a large blow hole in it or shows spots where the metal does not touch the shaft, do not say "that will do." Melt it out and try again. A little practice will enable you to do a first class job and will save a great deal of expense.

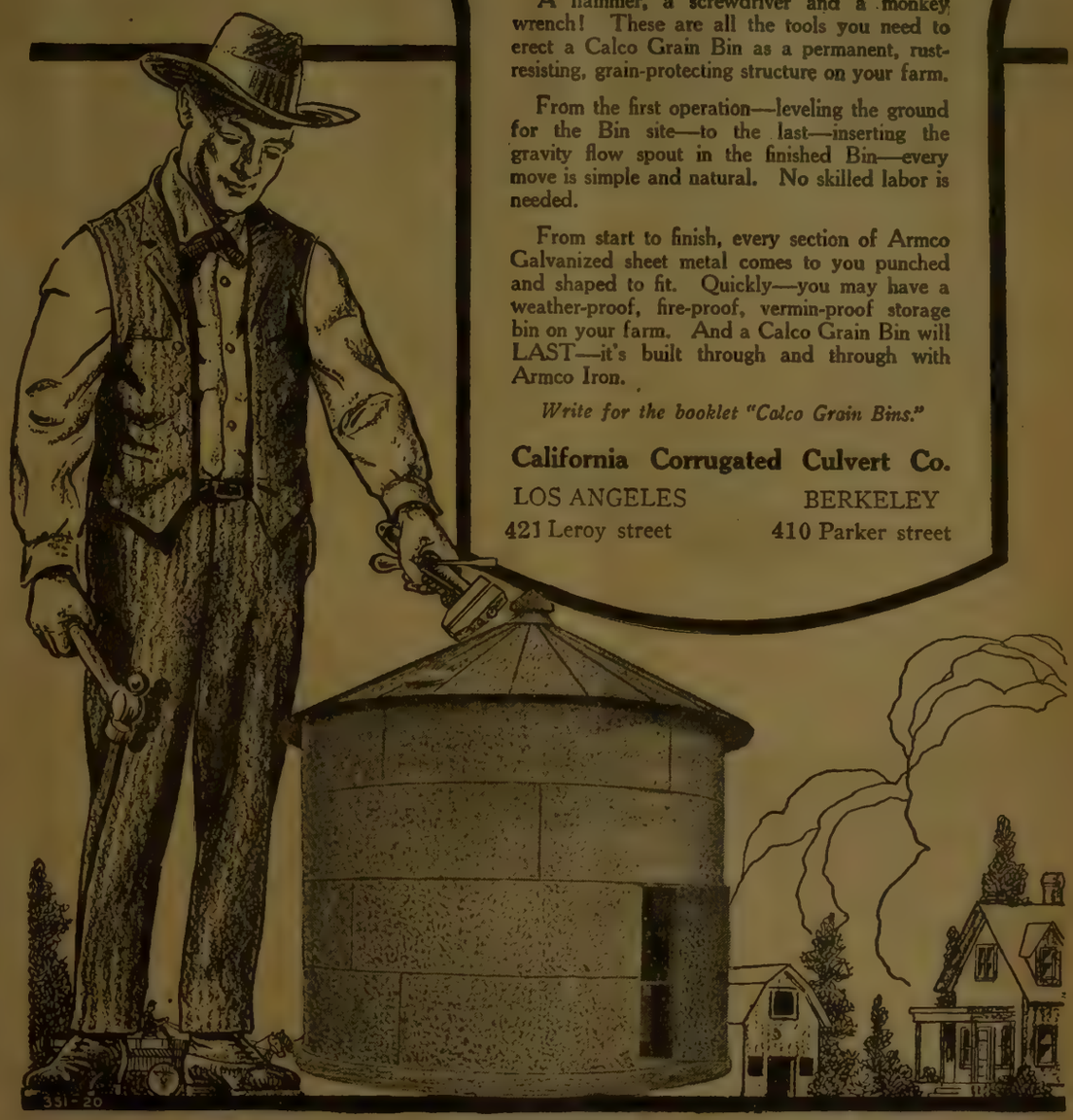
A great many bearings can be bought ready to set into place and scraped to fit. When this is the case it will be found much better than

(6) Testing Shaft in Completed Bearing.

pouring, but frequently one must resort to pouring the box when no "liners" can be obtained. If new liners are bought, the same rules for fitting should be followed as for a poured bearing.

Orchard and Farm will, from time to time, illustrate and describe other common shop repairs. The average farmer is a very good amateur mechanic, and many of our readers are more than amateurs. We believe, therefore, that this feature, in line with our policy of telling "how to do things," will meet with enthusiastic response from our readers.

This is all you need



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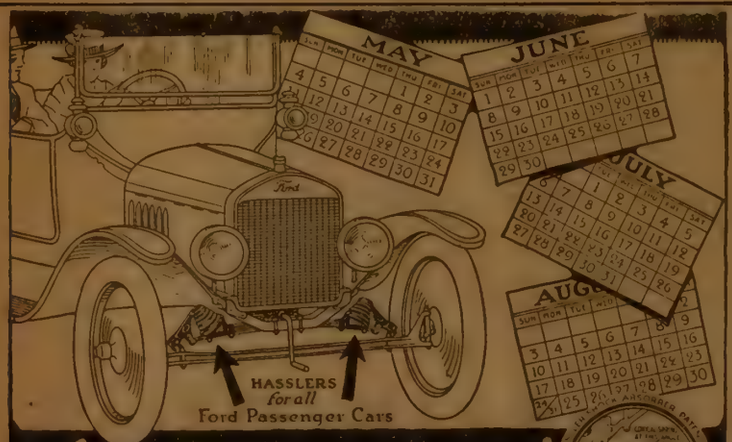

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Death-Cell for the Doomed Cockerels

Scalp the scalp-raising rooster that cracks your eardrums at crack-of-dawn and consumes large quantities of expensive feed. But first fatten him up by using a self-feeder like the one illustrated above, keeping the doomed bird confined so that he will make the most rapid possible gain.

The following rations may be fed profitably to cockerels which are cooped in order to be fattened for market:

The first ration consists of a mixture of 6 parts by weight of corn meal and 4 parts of low-grade wheat flour or middlings; the second ration is 1 part by weight of shorts or middlings, 2 parts of low-grade wheat flour, and 3 parts of corn meal; while the third feeding mixture is composed of equal parts by weight of corn meal, wheat flour or middlings, and oat flour.

With each or all of these grain mixtures either whole milk or skim milk should be fed, in amount sufficient to bring the mixture to the consistency of porridge, so that it will drop from the end of a spoon. If no milk is available, the farmer should add 10 per cent of chopped vegetables and 5 per cent of meat meal to the above rations. If water is used for mixing the feed, enough should be used to make a crumbly, moist mixture. Water may also be given to the fowls for drinking purposes where this feeding combination is used, but in the cases where milk is used in the ration it is not advisable to supply any additional water.

When the birds are first confined for fattening purposes they should be fed lightly for two to three days, after which they may be furnished all that they will clean up in 30 minutes, two or three times a day. Their heaviest meal for the day should always be the last one. Comprehensive experiments by the United States Department of Agriculture show that it takes 3¼ pounds of grain to produce 1 pound of gain on fattening poultry.

As a rule the fattening period lasts for from 7 to 17 days, during which time the fowls are confined in coops. The younger or smaller birds give good results where they are fed for the longer period. What has been said in the foregoing paragraphs applies with equal force to the fattening of all poultry.

The illustration shows a practical home-made fattening battery in which the moist rations may be fed in troughs, so that the birds can eat cafeteria fashion.

Why Charcoal and Lime?

"Why do you give your hens oyster shell and charcoal?" I asked of a young poultry enthusiast.

"Why, because—because the club leader said that it was a good thing to do," replied the youngster.

"But don't you know the reason for using these things?" I asked.

He did not, but his curiosity was aroused and he displayed much interest in the explanation.

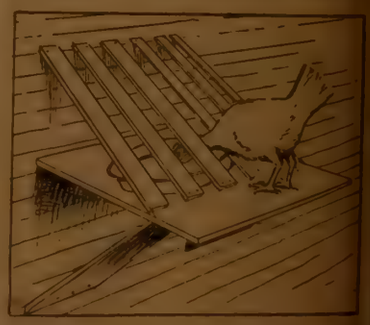
Ordinarily if the hen is laying heavily she does not consume enough lime to form the shells of eggs unless something besides the ordinary grain feeds is accessible to her. Oyster shells are very good for this purpose. A box of crushed shells may be placed before the fowls, allowing them to eat at will. Old mortar and fine gravel are also useful in supplying lime.

Charcoal has a great absorptive power for gasses, impurities, and acids, and thus acts as a corrective when the stomach is sour and digestion has been impaired.—Uncle Mortimer.

Drinking Helps Laying

A plentiful supply of clean, fresh water must always be available to hens. The fowls drink freely, especially when laying heavily, and should not be stinted of such a necessary and cheap material as water. The water pan or dish should be kept clean.

The stock-feed-rack idea has been successfully applied to the watering of poultry. One successful poultry



raiser uses a contrivance such as the one illustrated on this page, the chickens being forced to hop upon an elevated platform in order to reach the water, and being prevented from standing on the edge of the dish or contaminating the water, because of the necessity of reaching between the slats to drink.

It is the practice of a large percentage of the most successful poultrymen to feed a part of the daily grain ration ground. Most of them feed the ground grain moistened with either milk or water, although some feed it dry. The soft feed idea, as they have learned, must not be overworked.

Simple Egg Candler

"THE X-ray of the poultry business," is the term applied to the device known as a "candler." A simple, home-made machine is illustrated.

A peep through this egg-testing device, plus the ability to differentiate between sound and stale eggs, enables the operator to add markedly to the price of the fresh quality eggs which he sells.

The shell of a new laid egg has a soft "bloom," which is the visible sign of perfect freshness. This bloom is destroyed by a touch, and in any case disappears after a few days' exposure to the air. After that the appearance of the shell is not a reliable indication of the condition of the contents.

By holding an egg, however, between the eye and a strong light in such a manner that the rays of light come to the eye through the egg, the condition of the contents can be seen. This work is done in a dark room.

Handy Home-Made Tester

An ordinary hand lamp, a lantern, an incandescent bulb or a flashlight may be used. Any box large enough to hold the lamp, set on end, can be

A Box and a Lamp

Are all that you need to make this simple, effective candling machine. It is better to be safe than sorry!

used for a case. In addition to the hole in the side opposite the light there should be a hole in the top; otherwise, the heat from the light would fire the box. A tester chimney such as is used on a lamp for testing eggs in incubation may be used for candling.

For convenience the light should be placed on a table or shelf. The eggs to be tested should be placed at one side of the light, while on the opposite side receptacles for the good and bad eggs should be provided. Each egg should be examined alone by holding it, large end up, close to the light. A perfectly good, fresh egg shows "full" and "clear" before the light; there is almost no air cell at the large end, and the yolk outline is only faintly discernible. A fixed air cell of ⅛ to 3-16 of an inch in depth indicates a fresh egg, as eggs run in general. A larger air cell with a mobile lower line indicates—according to size and fluctuation—a stale egg or one becoming weak and watery.

Very small spots which are apparent in the eggs are usually blood clots. Large spots, rings, and shadows are due to heat and germination and indicate decomposition in the first stages. An egg that is opaque except for a large fixed air cell contains a dead chick at an advanced stage of decomposition. An opaque egg with large air cell having a mobile lower line is in an advanced stage of fluid decomposition.

Cleveland Tractor

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H. G. Saddoris of Fort Dodge, Iowa, reports that the use of his Cleveland Tractor made it possible for him to harvest his grain last Summer in half the time required when he used horses, and with less help. In fact, his 14-year-old boy operated the tractor, pulling one binder, and accomplished as much in the same time as could have been done by two horse-pulled binders, each pulled by a four-horse team.

This man, like thousands of other farmers, requires a tractor that will do a variety of farm work. A tractor—that is economical in operation.

—that is built rugged enough to stand up under the strain of hard, gruelling work

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The Cleveland is built to supply practically all the power needed on the average farm. It is designed and built by practical men who know what a farm tractor must stand.

It is economical in its use of kerosene and oil—and is small enough to be used profitably on both *light* and *heavy* jobs.

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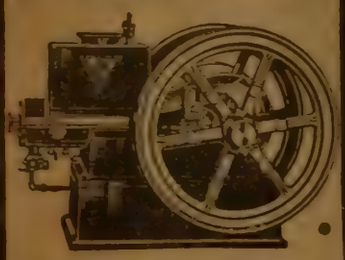

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Spray Chart for June and July

Formulas referred to are listed below. This chart covers the more common fruit and vegetable pests prevalent during June and July.

Prepared Especially for Orchard and Farm

By Charles L. Schufeldt

DISEASE OR INSECT	PLANT OR TREE, AND REMEDY	TIME TO TREAT; DIRECTIONS
Aphis (plant lice). Green, grayish black, red.	Roses, melons, cucumbers, squash, cabbage, walnuts, apples, citrus. Formula No. 4 for garden and roses. No. 4 for citrus. Be sure spray strikes all bugs.	At very first appearance of aphis; early treatment of little avail. Dry nicotine spray frequently used on large orchard trees. Formula No. 5.
Mealy Bug (collect in whitish mealy like bunches). Many kinds citrus worst.	Citrus trees; also many garden plants, leaf, stem, fruit and root. Difficult to control. Formula No. 1. Nos. 2, 3, and 4 give some relief. Soak No. 3 or 4 into soil about roots.	This pest has many natural enemies. Fight it from first appearance. If in large numbers in orchards call in a specialist. Fall and winter is best time, but in many cases it must be combated now.
Ants (small black Argentine). In house or garden.	Use formula No. 8. Saturate sponge in the syrup; place in fruit jar with large nail holes in cover. Commercial ant paste good in house.	Fight whenever seen. Lay jar on its side in pantry or garden and in several places around house. Be sure children do not get the syrup.
Ants in Trees (where they are after honey dew of scale insects). Ants protect these insects.	Citrus and other fruits. Make formula No. 8. Place an ounce of syrup in paraffin bag and nail to tree near base.	Make ready at first appearance. Fold top of bag over to protect contents of sack and cut holes in sack for ants to enter, or use tin can with cover partly cut out.
Nematode (eel worm). Causes knots large and small, and wart-like growth on roots. Worm very small; not visible to naked eye.	Beets, tomatoes, potatoes, carrots, all root crops; nursery trees. Once established in sandy irrigated soil becomes serious pest, difficult to eradicate.	Let soil dry out. Plow and harrow dry. Plant grain or grass not attacked. Alfalfa may follow beets. Worms live for years in soil if it is irrigated and cultivated. In greenhouse soil may be disinfected with 1 part formaldehyde to 100 parts water.
Corn Ear Worm (varies in color, etc., according to food. Usually small green worm about one inch long).	Corn ears, tomato fruit, cotton-bolls, bean pods, walnuts, etc. A bad actor. Gets inside to eat, out of reach of poison. Effective control yet to be discovered. Hand pick on tomatoes or wherever possible. Dust silk of corn with powdered arsenate of lead.	Spraying with arsenate of lead helps in case of beans or other plants of which the worm must eat the surface before getting inside. Treat as early as possible.
Pear Slug (small jelly-like brownish slugs).	Pear and quince leaves. Fine soil dust or air slaked lime.	Dust on trees to reach all slugs; dust will kill them.
Cutworms (smooth, light brown).	Garden plants, field beans, etc. Formula No. 7.	They eat at night. Hunt with a light. Use the bait. Get the first ones.
Grasshoppers.	Alfalfa, etc. Formula No. 7, dry mixed.	Bow poisoned bran in early morning. In large invasions use "hopper-dozer" (machine).
Green Worm (on cabbage, cauliflower, kohlrabi, etc.).	Formula No. 6, or powdered hellebore, non-poisonous when heads are formed. Wash well before using after poison treatment.	Watch for white butterflies and spray at once; worms will soon hatch. Destroying butterflies will help.
Squash Bug (brown, stinking).	Squashes, cucumber, melon, pumpkin. They will cling under small boards or shingles placed close to plants at night. Brush into coal oil night and morning.	Hand-pick old bugs. Smash clusters of brown eggs. Spray young with No. 3, adding 1 ounce "Black Leaf 40" to 6 gallons or 1 teaspoonful to 1 gallon of soapy solution.
Tomato Worms (large, greenish).	On tomatoes. Hand pick. If many, use formula No. 6.	Destroy all the large, reddish-brown chrysalides or pups found in soil. Catch large gray moth with light at night.
Slugs and Snails (with and without shell).	On many vegetables and flowers especially small plants. Wood ashes and lime when fresh help some. Formula No. 7.	Common in summer. Hand pick. Seek in dark, damp places, under walks, fences, boards, porches, etc. In large numbers, destroy with hand-batch.
Red Spider (spider-mites, very small; under side of leaves).	Beans especially causing rusty appearance. Use duster; spray dry fine sulphur or lime sulphur.) Repeat as required.	Watch for very first appearance. In using lime-sulphur, follow directions on package. Spray in early morning on warm day. Dry sulphur best, or use 1 part lime sulphur to 50 water.
Red Spider (on trees and cotton).	Citrus, almond, peach, prune, cotton. Dry sulphur or lime sulphur, 1 part to 50 parts water.	Repeat treatment every 10 days as long as any mites hatch. Knapsack form of dust sprayers is good.
Tuber Moth (potatoes).	Protect potatoes from moth at night. All moths lay eggs at night. Cultivate thoroughly; hill vines, harvest early.	When crop is nearly ripe, moths lay eggs in tubers after dug, or if not deeply covered, or if in cracks in soil.
Wire Worms (about 1¼ inches long, yellowish, jointed). Adults are black click beetles.	Potatoes, corn, beets, etc. Rotate crops, planting some crop not damaged. Leave no trash in which adults can spend winter months.	Plow and harrow in fall to kill pupae. Trap the beetles under piles of straw, etc., and burn in late fall.
Flea Beetles (small dark beetles that jump or drop on being disturbed).	Potatoes, etc. Use a 5-5-50 Bordeaux mixture. Mix as directed or purchase ready for use. May add arsenate of lead.	Spray with 4-4-40 or 5-5-50 Bordeaux as a repellant. Best to add poison, 2 pounds arsenate lead paste to 50 gallons.
Rust (anthracnose, orange rust).	Berry bushes, rose, etc. Bordeaux mixture, summer strength, directions on package.	Pick off and burn all rusted or diseased leaves and spray young growth with Bordeaux repeatedly.
Rust (on asparagus and beans).	Purchase Bordeaux mixture, summer strength, 5-5-50; dilute as directed. Or spray with dry sulphur or 1 part lime sulphur to 30 parts of water, before noon of warm day.	The treatment for red spider is good for rust. Rust and mites often go together. Treat for rust at very first appearance. Cannot be stopped once fully started.
Mildew. (Commercial lime sulphur is convenient. Use as directed and repeat if needed.)	Roses, beans, peas, dahlias, grape. Dry sulphur with powder spray, or liquid spray 1 lime sulphur to 30 water.	Apply dry sulphur when dew is on in morning of warm day. Apply spray or dry sulphur evenly on first appearance of mildew.
Scab and Rhizectonia (on potato seed pieces.)	Soak seed in wooden vessel 1½ hours in 1 oz. corrosive sublimate to 8 gal. water. Or soak 2 hours in formaldehyde, 1 pound to 30 gal. water.	Sort seed, discarding scabby ones or any showing decided brown streaks or rings when stem end is sliced off. Never plant seed in which disease is developed.
Blight (on potatoes, followed by rot of tubers).	Potatoes. Spray with commercial Bordeaux, 1 part to 75 to 100 parts water before disease appears. Repeat. Prevention better than cure.	One can make his own Bordeaux or bluestone solution, but the commercial solutions on the market are good.

Formulas Used in Spray Chart

FORMULA NO. 1—Fumigation. Multiply distance over tented tree by distance around; "point off" last two figures. Three-fourths this amount is number of ounces sodium cyanide required. For each ounce cyanide use 1½ ounces sulphuric acid in two ounces water. Place latter in deep dish under tent; drop in cyanide, close quickly, leave one hour. Do not breathe gas. Use now for mealy bugs or young scale not cleaned up before; best about September when young scale are out.

FORMULA NO. 2—Ordinary household washing powder, 8 oz.; 45 degree distillate (as used in autos), 1 cup; water, 2 gals. Boil powder and one quart of water. Remove from fire and stir in distillate thoroughly while hot, until well mixed. Add water to make two gallons.

FORMULA NO. 3—Distillate (about 30 degrees Baume), 1 gal.; soap (whale oil is best), 1½ pounds; water to make 20 gallons. Dissolve soap in a convenient amount of boiling water; set away from fire and at once stir in the distillate; then add the balance of the water.

FORMULA NO. 4—Make same as No. 3 and add "Black Leaf 40," 1 oz. to 7 gallons, or 1 teaspoonful to one gallon.

FORMULA NO. 5—For aphis in home garden. One heaping tablespoonful of soap powder, dissolved in one gallon warm water, with teaspoonful of "Black Leaf 40" added. For aphids on walnuts and other trees, use fine tobacco dust with 40 per cent kaolin or hydrate lime as a diluent. Apply with blower or powder gun.

FORMULA NO. 6—Arsenate of lead: paste 6 pounds (or half as much powdered arsenate of lead); wheat flour (stirred into water), 4 pounds; water, 100 gallons. Use 1 ounce of the paste or ¼ ounce of powder and 1 ounce of flour to one gallon of water for small garden. This spray must be well agitated while using.

FORMULA NO. 7—Poison bait. Wheat bran, 5 pounds; white arsenic, ½ oz.; or Paris green, 5 oz.). Mix well; then add one lemon, chopped fine, stirring slowly with enough and little water to make a thick. Make a slightly moist, crumbly mash which will broadcast easily. Note—If birds, chickens or pets are able to get the poison great care must be exercised. For "sow-bugs," place the bait on a moist place under straw or litter.

FORMULA NO. 8—The Government Argentina-ant syrup is made as follows: Granulated sugar, 15 pounds; water, 7 pints; tartaric acid, crystallized, ¼ ounce. Boil for 30 minutes and allow to cool. Dissolve ¾ ounce sodium arsenate (chemically pure), in 1 pint hot water. Cool. Add poison solution to syrup and stir well. Add to the poisoned syrup 1½ pounds honey. Mix thoroughly.

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Address

Farm Examiner Bldg., Los Angeles, Cal. "SUNFLOWERS," Orchard and

Summer in the Home Food Factory

By Charles L. Schufeldt

Home gardens are in fullness of fruition in the month of June.

Many crops are now ready to harvest and preparations will soon be under way for a second crop.

Be sure the soil is moist and at the same time loose enough to admit air when seeds are planted. All of the soil, not that around the seed only, must be moist. Garden seeds planted in properly prepared soil do not need sprinkling or irrigating until after they have germinated and appear well above ground. Such plants as corn, beans and tomatoes should grow in moist soil for several weeks before needing water if planted in properly prepared soil.

Irrigation and cultivation must be correctly done. A little neglect in either may bring about crop failure even if all other conditions are ideal. A state of constant, uniform moisture is better than intermittent moisture with intervening drought conditions. Water can be held in the soil for many months if the top soil is always loose and if weeds are not allowed to become established, but soil packed at the surface or infested with weeds soon gives up its moisture. Never irrigate twice in succession unless there has been intervening cultivation.

While you are cultivating your soil cultivate also a happy, peaceful state of mind and learn to love the humblest of struggling plants. Become acquainted with every plant. Each is interesting and has lessons to teach you. If you treat Mother Nature with kindliness she will return your investment with overwhelming interest.

Good soil contains a living mass of active bacteria. For their best development and activity, air, warmth and moisture must all be present. Increasing the air, warmth and moisture by proper cultivation and irrigation is one method of increasing the rapidity of growth. Fertilizing is another method. All vegetables produce best results when their growth is rapid.

It is best not to do all irrigating close to the stems of plants. Coax roots to go deep and far after moisture and fertilizer.

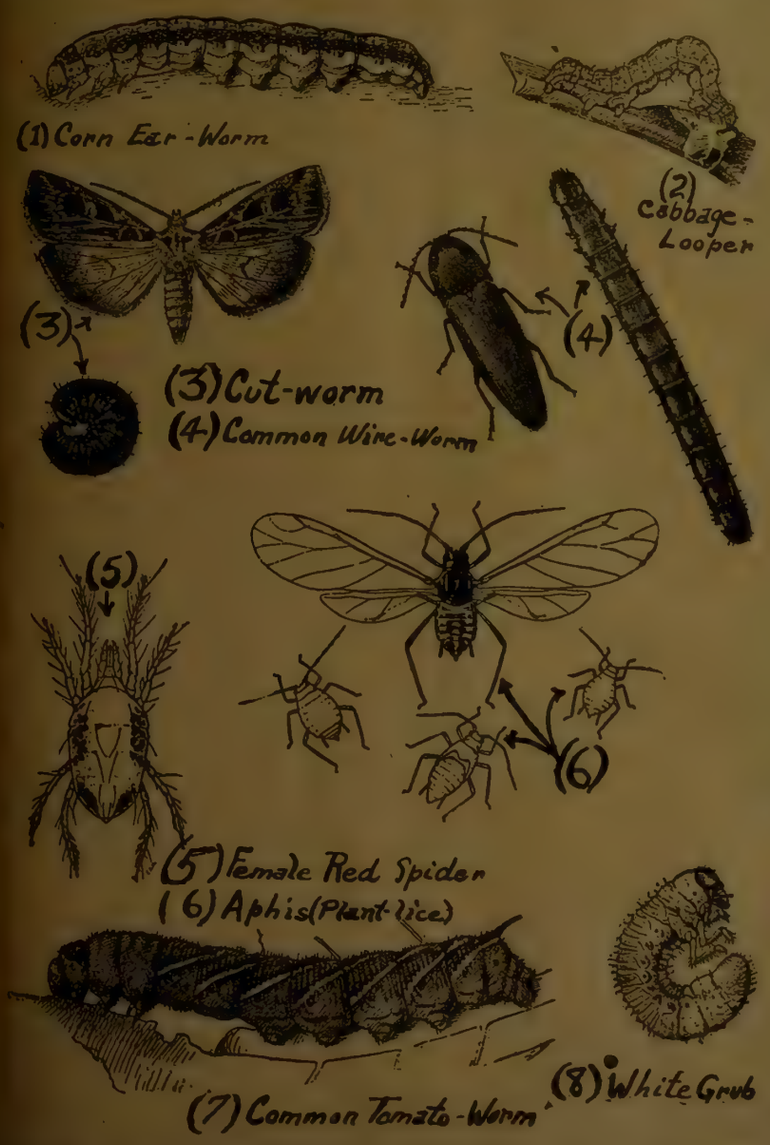
Some excellent varieties adapted to the Pacific west which may be planted at this time are as follows: Stringless Green Pod bush beans, White Kentucky Wonder pole beans, Oregon Evergreen and Stowell's Evergreen sweet corn, Stone tomatoes (set plants), Summer Crookneck and Banana winter squash, Estampes or Cheese Pumpkin (or Sandwich Island if little water is available), Klondyke or Davis cucumber, Yellow Jersey sweet potato, Detroit Red, Danvers carrot, Iceberg lettuce, French parsnip.

If but one crop is grown in a season, June may be the best month for planting it. Plant abundantly of beans, corn, tomatoes, squash, cucumbers, pumpkins and sweet potatoes. If you have not already planted the following, or if you desire a succession of crops, now is the time to plant beets, carrots, egg plant, okra, parsnips, peppers and some kohl rabi and Iceberg lettuce. Govern the amount of each according to the needs and tastes of the family. It is better to wait a few weeks before planting cabbage, cauliflower, peas and potatoes.

If great diligence is not displayed at this season, various pests may rob the gardener of the fruits of many days of care and watching. Study the pest control chart in this issue.

A convenient summary of the ordinary measures for control of garden pests was published in the April number of Orchard and Farm. The accompanying chart supplements the April article and will answer the requirements of the gardener or horticulturist who desires more detailed and specific directions.

The commercial orchardist or vegetable grower should keep in touch with the county agent and horticultural inspector, who are prepared to offer advice on specific problems.



If you have not already obtained Circular No. 204 from the University of California, by all means send for it. Address, Director, Agricultural Experiment Station, Berkeley. The circular is free. It is called "Handbook of Plant Disease and Pest Control."

Oil and distillate sprays should not be strong enough to injure the foliage.

Home orchard trees will be benefited by an occasional spraying with the garden hose; a small stream, directed with force, will wash mealy bugs, woolly aphis and other pests in considerable numbers from the trees. The hose may also be judiciously used on garden plants.

Tobacco dust worked into the soil around asters and carnations will assist in ridding them of root pests.

Good cultural methods and correct soil management will do more than anything else to prevent many of the diseases of fruit trees, such as curly leaf, little leaf, June drop and mottled-leaf of citrus.

A whitewash formula, said to be weather-proof, used for prevention of disease and sunburn is as follows: (1) Quicklime, 68 pounds; hot water, 12 gallons. (2) Common salt, 2 pounds; sulphate of zinc, 1 pound; boiling water, 2 gallons. (3) Skimmed milk, 2 gallons. Slake the lime thoroughly, dissolve the salt and zinc-sulphate in 2 gallons of water and add the milk. Mix thoroughly. Two pounds of flour paste, dissolved in 2 gallons of hot water, may be added instead of the skimmed milk.

"It climbs like Hell," exclaimed a British General, referring to a "Caterpillar" Tractor in the Battle near Antwerp in 1914. "Let's build a war machine along similar lines that will climb to beat Hell." And from the "Caterpillar" Tractor principle the famous tanks were developed.

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They called them "Tanks" upon the Western Front because, in order to deceive enemy spies while they were being built, the British Engineers circulated the story that they were rolling water tanks, destined to carry fresh water to the troops in Egypt.

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EDITORIAL DEPARTMENT

Cheerful Chat Among Farm Folk

James C. Knollin, Editor

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things: looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

Letting Go

TWO Irishmen were removing old shingles from a roof, one using a pick and the other a shovel. The man with the shovel slipped, and as he passed the man with the pick, made a wild lunge and grabbed him by the ankles, dragging him along and over the edge of the eaves. But Pat, who had the pick, had presence of mind enough to hold on to it and caught it on the edge of the roof. There they hung, with Pat swinging by the pick handle and Mike hanging to his ankles. Pat kicked vigorously.

"Dom ye, Mike," he yelled. "If ye don't let go o' me feet I'll hit ye over th' head with this pick."

We will hope that he didn't let go. A lot of men who are down and out would be up and in if they hadn't let go. Many a man who has met with disaster in his business has found a fortune in his hobby, because when he went broke he refused to stay broke, and because he would not be a quitter, but was determined to do something interesting, useful and productive. When things look their worst, hold on a little longer. Help may come just before the break!

Hold Fast!

Business and labor are maintaining powerful organizations and lobbies designed to secure legislation which will be to their advantage. Every agriculturist in America should make it his business to keep closely in touch with developments which take place during the reconstruction period in which we are now living, and both personally and through the various co-operative organizations with which he is affiliated, bring to bear every possible influence that will tend to promote the interests of agriculture generally.

The food producers were frankly told during the war that everything depended upon them. Are they willing, now that hostilities have ceased, to allow their true position to be clouded? Is the American farmer going to slip back into the old, unorganized lethargy which resulted in his always being at the little end of the horn? We believe not!

Action Needed

We can perhaps forgive the members of Congress for the childish wrangling which has marked their war-time deliberations, but if at the next session they fail to pass the agricultural appropriation bill, which was left dangling when they adjourned, there should arise such a protest from farmers throughout the country as will force favorable action on this measure. And in the meantime the fate of the county agents rests with the Governor of the State. If you value the work of your farm adviser, let the Governor know that it is essential to the welfare of California that the State's share in the expense of this great work be assured by his okeh of Senate Bill 556.

Advice to Beginners in Food Production

"WORK for the man who knows."

This, in a nutshell, is the best advice we have to offer the many readers who write to us for information on how best to make a start in some certain branch of agriculture.

Work several months, or a year, or two years—until you have learned all that he has to show you. Better still, work for a number of men in several localities, each of whom may give you new ideas and a different viewpoint.

Work, whether you have plenty of capital or none.

For if you commence without the practical knowledge that comes from having actually done the work and having seen it done, no amount of capital can save you; money can never buy the wisdom taught only by Old Man Experience.

But this does not mean that the ambitious beginner should slight the written sources of information.

Read in your spare time and any other time that you can spare. Read everything that has been printed on the subject. Read books and bulletins, catalogs and circulars, magazines and newspapers. Read and remember.

In this issue an experienced beekeeper tells how to make a start in commercial honey production. His first advice is: "Learn how."

In the May number of Orchard and Farm a successful goat raiser told how to get into the goat business, and his most pointed pointer was: "First, learn." He worked a year before he invested.

False pride has kept many a man with more capital than common sense from going on some one's pay roll for the purpose of gathering first-hand information. The game of agriculture in any branch is an intricate one. The winners are not to be found among those who have never learned the rules.

Uncle Wiseacre Takes a Hand

"I BIN gonna pay that bill fer three months, Jud," whined Ben Gonnadooit one summer evening at Whitson's store, "an' I'm expectin' t' have a little money soon. Kaint ye let me have some bacon an' beans? Seems like I never quite get over th' top, Jud," he continued. "I'd a made a mint o' money on my potatoes last fall ef I got that casting fer th' digger in time t' get them out o' th' ground before th' big freeze. But between thet an' th' ditch bank breakin' an' drownin' out most o' my alfalfa while I was on a fishin' trip, I didn't make much of a showin.' Seems like——"

He was interrupted by Uncle Wiseacre, who had been until now a silent listener, but whose outbursts, although infrequent, were sometimes rather violent.

"Look here, young feller," said the old gentleman, knocking his pipe on the stove and gazing fiercely down from beneath his bushy eyebrows upon the shrinking form of the luckless Ben. 'Your trouble commenced th' first time ye put off hoein' th' garden an' run away as a barefoot boy, t' go rabbit huntin.' An' now, ye lazy, good fer nothin' slacker, ye spend two-thirds of yer time figurin' out ways t' get out o' work an' th' other third explainin' it. They's only one redeemin' feature about you, an' that's yer wife. If ye had worked one-half as hard fer six months as she has fer six years, ye might 'a begun t' catch up to within about four miles of yerself by this time. Thet poor, little, tired-out woman is up thar now washin', even though she's half sick, and you're a-goin' home without no groceries because ye ain't got gumption enough t' work an' pay yer bills. Shut up!

"I'll buy an order a groceries fer HER, and you take 'em up thar t' yer shack an' then ye report back here t' me in th' mornin'. I've got some carpenter work t' be done at my place an' I got lots o' time t' oversee th' job. It'll last about two weeks an' th' pay'll be $5 a day. Half of it goes t' Jud an' th' other half t' yer wife, and all ye get is yer meals an' terbaccer."

"Oh, that so, is it, old man? Don't reckon I need yer job. I kin worry along without yer advice, too, I guess."

Uncle Wiseacre made a quick lunge and grabbed the surprised Ben firmly by the nape of his neck. "Don't talk t' me that way," he shouted, shaking his victim violently. "See thet star?" (And he displayed a nickeled symbol on his vest.) "Didn't know I was actin' sheriff now, did ye? Well now, ye'll either take thet job on th' terms I've laid down, or I'll run ye in fer vagrancy and ye can work it out on th' rock pile. How does that suit ye?"

"L-let me go, Uncle Wiseacre," pleaded Ben in a weak voice. "Gimme th' groceries. I bin gonna ask y'u fer some time ef I couldn't do some buildin' fer y'u, but seems like I never got my work in shape t' get away. I was figgerin' on gettin' some kind of a job t'morrow anyway, seein' as th' weeds is too high in my corn t' cultivate now. so yer offer come at jest th' right time. Well, s'long, Jud. Mighty glad t' have th' beans an' bacon. A feller shore kin work up a good appetite these long summer days."

Spare Us!

"CLOTHES should not only be becoming but they should suit the occasion and the wearer's pocketbook," is the elucidating suggestion contained in a recent circular sent out by the New York State College of Agriculture. Wondering how the enlightened advocates of domestic science ever succeeded in scaling the intellectual heights where such constructive philosophy is revealed, the seeker after knowledge is immediately awed by another example of educational logic from the same source:

"Pictures will hang flat against the wall if the eyelets for the wire are fastened on the sides of the frame near the top instead of about a third of the way down, the more usual method."

Oh, fortunate farm women of "York State," that you should have your household problems so easily solved for you! While you cook dinner for seventeen threshing hands and wonder where you can secure efficient help; while you feed the chickens, and gather the eggs and bandage an injured, diminutive toe; while you bathe the baby and answer the telephone and plan your grocery order, a bespectacled maiden of uncertain age who "gave up the idea of marriage to lead an intellectual life" slaves with nicely manicured hands over a polished desk in a cheerful office, to lighten the great load that you carry! May she attain the seat among the mighty that her self-sacrifice and devotion deserve!

Fortunately we have here in the West home demonstration agents who work among instead of "at" the farm women in their respective territories. Their success and the cordiality and interest with which they have been received have led us to regard their work as highly profitable and influential. Are we to conclude, then, that the women on the farms "back East" are actually incapable of constructive thought and must be told how to peel potatoes and why thin tumblers should not be dropped in boiling water?

As we recall the methodical ways and quick wits of our mothers and grandmothers "back there," we are not inclined to hold this view. We must conclude, rather, that some so-called educator who had rather go without eating than wash dishes and always takes care to send her clothing to a laundry that "does mending free" is confronted each week with the necessity of grinding out a certain amount of copy for the publicity sheets of her department. No doubt she is at this moment congratulating herself upon the dispatch with which she has succeeded in filling the stipulated space. But unless the farm women of New York, long subjected to a bombardment of such ridiculous pitfic, have ceased to regard it seriously and dismissed the matter from their minds, something is going to happen. And when it does, certain so-called "educators," who, in consideration of a remuneration from the public treasury, condescend to liberate these jewels of analytic thought, will be looking for jobs as "hashers."

Motor Transportation

A SEEMINGLY endless ribbon of straight, smooth, concrete highway is no novelty to us here in California. The wonderful main roads traveled by California farmers as a matter of course would seem in some other States so luxurious as to challenge belief. To drive a pleasure-car or truck mile after mile, hour after hour, over a perfect highway is (if the driver be not without imagination) to feel the true poetry of motion and to visualize the time in the not-far-distant future when the entire country will be honeycombed with just such roads.

We on the Pacific Coast must and will have more of them, until every rural district is brought close to its markets. Other States cannot fail to follow the wonderful lead set by California; the great transcontinental highways will be graded and straightened, widened and paved; a trip from San Francisco to New York will undoubtedly be made within the coming decade entirely over macadamized roads. The program of federal assistance has already brought about the greatest activity in road construction and improvement experienced in years, almost every State participating.

That aerial transportation may some day almost entirely displace travel on the earth no one, in the light of current events, can have the temerity to deny. But in the meantime we are living in the era of the good road and the motor vehicle. Just as the pleasure car, and in many cases the farm truck, has revolutionized farm life, so will the rural freight lines and the rural express solve and simplify the producer's marketing problems. For accurate tests have shown the superiority for short hauls of motor trucks over railway transportation—if the roads are good.

Already we see upon our highways enormous five-ton refrigerator cars hauling dairy products 50 or 100 miles; rural express trucks taking to the creameries the milk of a number of dairymen for less than it formerly cost one of them to ship by rail; wholesale delivery to the farms from city dealers, of feed and oil; transportation of livestock from farm to market with trucks and trailers; quick movement of perishable produce, and widening of the zone for fresh vegetable growing around the centers of population.

It is freely predicted that the next few years will bring cheaper motor-fuel and more durable tires; better motor-cars for less money and almost unlimited extension of motor transportation systems. This will mean still greater expansion, and so it will go.

All these things cannot fail to react for the welfare of the food-producer; good roads mean more to agriculture than perhaps to any other industry. From property values to transportation, better roads mean better farming. Bond issues and government assistance are the substitutes for ruinous taxation and back-breaking assessment. And without these burdens we can all be on and for the highways.

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PISTON RINGS

Increase Power—Decrease Carbon
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Wherever you are and whatever your motor, you can get immediate service on these rings. Complete stocks of standard and over-size rings are carried by over 300 jobbers and supply houses throughout the country. Many thousands of dealers can extend to you our service, which enables them to specify your size requirements for practically every make or model of motor without delay. You don't have to wait.

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A special ring for engines that pump oil. Used in top groove only of pistons to control excess oil, with McQuay-Norris Leak-Proof Rings in lower grooves to insure maximum compression and fuel economy.

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A Non-Poisonous Liquid Spray That Never Fails

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"Red Crown" is straight-distilled, all-refinery gasoline. Look for the Red Crown sign before you fill.

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VICTORY FLOWER GARDEN
Collection High Grade Flower Seeds
SEEDS Astors, Begonia, Gloxinia, Oxalis, other kinds. 25 Choice Bulbs 10c
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Send for our Price List of Lumber, Sash, Doors and Builders' Supplies. We save you middleman's profit.
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1401 5th St., Oakland, Cal.

More About Napier Fodder

It is not too late to set out cuttings now, although experienced growers recommend withholding large plantings until late summer and early fall.

SINCE the publication of H. C. Davis's article on Elephant Grass, or Napier Fodder, in our April issue, many Orchard and Farm readers have secured cuttings and have commenced experiments with the new plant on their own land.

Several inquiries have been received as to whether it grows like alfalfa the year 'round. This will, of course, depend upon climatic conditions. It is not a cold-winter plant, but in the southern part of the State, especially with ample rainfall or some irrigation, the Elephant Grass usually grows all winter. Eugene Spencer, who first commenced growing this plant on his Los Angeles city lots in 1917, set out joints during each month of that winter and they all grew nicely, while those which had been planted in the fall seemed to thrive throughout the winter months. During the winter of 1918, however, which was more severe, all of his young plants froze to the ground, but came up again in March.

A Wonderful Hay Crop

THE fact that Napier Fodder (or Elephant Grass) has been enthusiastically adopted by farmers and stockmen throughout the United States as an annual hay and ensilage crop is in the nature of a surprise to its adherents in the southwestern States, where it was first introduced and is now being widely grown as a perennial. One of its greatest advantages, as seen by southwestern enthusiasts, is that it gives a permanent stand of heavy-yielding fodder.

Its quick growth and tremendous yield are given as the reasons for its adoption by eastern and northern growers, whose plantings are as yet more or less experimental. The plant has already been introduced, however, in almost every State of the Union. The extensive experiments which are now in progress under varying climatic conditions will definitely determine its status as a general farm crop, both annual and perennial, in all sections of the country.

Since the publication of H. C. Davis' article in the April number of Orchard and Farm, the most intense interest has been manifested in this remarkable crop, and those who advertised cuttings report that they were fairly "swamped" with orders and inquiries. Indications are that this year's supply of cuttings will be quickly exhausted.

The above illustration shows a stand of Napier grass hay the first season, at Descanso, Cal.

New cuttings set out after November of that year refused to take root because the ground seemed to be too cold. It has been found that considerable warmth is required to start the roots, but that the plants will withstand quite severe conditions after being once well rooted. And if no protracted periods of cold weather are experienced and the ground remains fairly warm, light frosts are readily withstood by even the very young plants.

In Higher Altitudes

Of greatest interest, perhaps, are the experiments being conducted with Napier grass at the higher elevations, under desert conditions. There are advocates who insist that Napier fodder is to be the means of saving the cattle industry in California. Cattlemen have long been seeking a perennial that will withstand considerable cold weather and live through the long, hot, dry summer period in such regions as the Antelope Valley, deriving sufficient moisture from the winter rains and snow to survive the desert summers, as do the native brush and bunch grass found in these sections. When cattle, labor and feed were less expensive, beef growers were able to withstand periods of range shortage, but under present conditions it does not take many such experiences to dampen the ardor and dent the pocketbook of any range man. If a cultivated grass can be found, then, which can be relied upon to furnish large quantities of forage year after year, even during protracted drouth periods, it is certain that it will be received with enthusiasm by cattlemen.

Those interested in the growing of Elephant Grass claim that it possesses just these necessary attributes. While the enormous yields credited to the plant are usually secured with irrigation, still it will make from one-fourth to one-half of this yield without irrigation, and this is undoubtedly more green forage than can be secured with any other plant. Another advantage of the grass is that it adapts itself readily to almost any kind of soil, even withstanding some alkali and salt. It does not have a root like Johnson grass, and while well-established fields are about as difficult to plow under as alfalfa, still it may be readily eradicated by plowing and harrowing.

A Farmer's Experience

One Antelope Valley farmer gives a very enthusiastic report of his first

Eugene J. Spencer

And one bunch of Napier Grass; 131 stalks. Rich in protein, carbohydrate and ash. Greedily eaten by horses, cattle stock like alfalfa, nor injure horses' and cows' kidneys when fed alone and does not leave a grass taste in the milk, but gives a rich color to the milk and more butter fat. Napier Grass lives forever in warm countries.

Price, Joints or Root Plants, $5 per 100; $1 per dozen. PLANT NOW AND GET A START.

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It puts back into the soil what the trees take out—Nitrogen. Helps young trees to grow thrifty and strong; keeps old trees from losing their productiveness.

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Cheapest because it supplies most available Nitrogen at the least cost. Best because it is taken up by the trees immediately after application and leaves no injurious residue.

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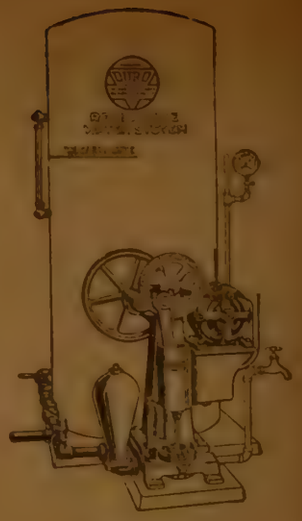

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In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

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has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year.

Double Gears are used, each carrying half the load.

We make Gasoline Engines, Pumps, Tanks, Water Supply Goods and Steel Frame Saws.

Write AERMOTOR CO., 2500 Twelfth St., Chicago

NOTICE TO BUYERS OF NAPIER GRASS CUTTINGS

I wish to thank the readers of Orchard and Farm from whom I received many nice letters regarding the splendid condition in which they received their Napier Grass stock, and their success with it. I have shipped to all the Western States, Iowa, and as far East as North Carolina, and to the Hawaiian Islands. I have many orders booked for the first available stock for fall planting.

MRS. F. E. GALBREATH, Pixley, California.

experiments with Elephant Grass. "I planted rooted plants in the latter part of September, 1917," he states. "The elevation of my ranch is about 3000 feet, and the winters are rather cold. These plants froze to the ground during the cold weather, but the heart of the plant seemed to be below the frost line and they came up again in the spring, reaching a height of four feet, during the summer of 1918, without irrigation. The bunches were very large, producing surprising quantities of feed.

"In another experiment I set out some rooted plants in May, 1918. I watered them well at time of planting, but they had no more water during the long, hot summer. They reached a height of three and one-half feet before August. An extremely hot period at that time checked their growth, but after the fall rains they again grew nicely and I harvested a crop of joints in November, before freezing weather. The few plants that I left standing in the field froze to the ground, but, although the soil froze at times to a depth of one to three inches, the plants lived and came up strongly in the spring."

Experiments with seed do not seem to have produced the success attained with cuttings. The seed is very fine and must be very carefully planted, and apparently will germinate only under very favorable conditions.

The cuttings or joints grow rapidly in the right environment, but cannot start in dry soil. The joints should be set out in rows about four feet apart, and three feet apart in the row. It is now too late for large plantings in most localities, from March to May being the best months, depending upon climatic conditions. In the Antelope Valley plantings are made up to June first. Many beginners, however, plant a few cuttings now in order to grow their own field plants.

Fall Planting Recommended

Early fall planting of fields is to be recommended, and those who intend to try the plant in September should make early arrangements for obtaining a supply of joints, as another scarcity threatens.

The joints should be planted in a slanting position, and should not be covered with more than one and one-half to two inches of soil. They are set with the short end up, allowing the tip to project above the ground. Plenty of sunshine and moisture are essential for giving the cuttings a start. The cuttings, when fresh, are very succulent, and unless they are planted in moist soil will become quickly dried out and die from lack of nourishment. A little attention the first month, while the joints are making roots, will pay in the long run. The soil should not be allowed to bake or form a crust. After they once become rooted, the plants may be cultivated, if necessary, to clear the rows of weeds and to conserve moisture.

After the beginner has raised enough joints to make a large planting, perhaps the best way to start them is to make a furrow early in the fall when the ground is warm and, as soon as the stalks are ripe enough to plant, lay the entire stalk in the furrow. Place the stalks end to end and cover with about three or four inches of soil. They will then sprout at the joints and make a good growth before cold weather. Those who have followed this plan report that the plants made a growth of 24 to 30 inches before freezing weather and lived through the winter in good shape. Moreover, whole stalks, planted after it was too cold for them to sprout, lived in the ground through the winter and sent up sprouts from each joint in March and April. The joints seem to keep better when the stalks are left whole. Some experimenters have merely buried the stalks through the winter, dug them up in the spring and replanted the joints, but others are of the opinion that this is unnecessary.

Wonderful Possibilities

Those who have become acquainted with Elephant Grass almost universally agree that it is the fastest growing perennial yet discovered. The stalks multiply with extreme rapidity. In one case a one-year-old plant, grown from one joint, carried 41 stalks. This same plant produced, the second year, 122 stalks 10 feet high. In another case, it is known that one joint produced in one year over 1500 cuttings for further planting.

After one cutting, it comes up again very rapidly. Stalks cut to the ground have been known to grow 4 feet in 30 days. A conservative estimate of the yield of green feed produced in this period is given as 30 tons per acre (or 7 tons of dry feed). Cut as often as alfalfa, it has been found to produce several times the amount of hay, and since it is extremely palatable and analyzes very high in feeding value, bids fair to become a successful rival of the universal hay-plant.

The plants have been known, under favorable conditions, to produce stalks 7 feet high in 2 months after they had been cut to the ground, and when cut at this period for ensilage to give the enormous quantity of 60 tons of green feed to the acre.

Wide Adaptation

As to the possibilities for general adoption of the plant, no doubt it will eventually be grown in many localities now thought unsuited for it, especially since great interest is already being manifested in it as an annual hay crop in sections where severe winters are experienced.

It is undoubtedly destined to become more and more popular with stock men, since it does not bloat animals, and is relished by all classes of stock. So far as is known, it will not affect the kidneys nor in any other way injure animals when fed alone.

It has been determined that about 3200 cuttings are required to plant an acre. Most of those who are now growing it began with small number of cuttings and produced joints from these. Now is a good time to emulate their example.

Current Event

An agile young fellow named Oliver,
On fording a ford in the river,
Was quite at a loss
When he got across—
The current had taken his flivver!

CO-OPERATION IN DAIRYING

Everyone should eat more milk and butter, ice cream and cheese—city people especially, but they don't know it.

The dairyman should advertise his product same as other producers advertise theirs.

He will sell more and at better prices, and will then have more money with which he will get better cows that will give more milk per cow that will supply the increased demand caused by his advertising, that will give him more money to get more cows and so on.

For every advertisement for butter substitutes there ought to be one for milk or butter or ice cream or cheese.

Not an advertisement for some one's brand, but a truth telling advertisement about the product itself.

You say you are too busy to attend to it yourself; then combine with others in the same line and who are also too busy.

Subscribe a small sum of money; have someone on the job for you ALL THE TIME, telling the truth to the public, contradicting erroneous and false statements, putting up YOUR side of the case, and all under your own control.

The National Dairy Council and several State Dairy Councils are doing this.

California Dairy Council will be ready to do it, too, as soon as its membership and income are large enough.

Write NOW. Say you want to join and ask what YOU are expected to pay.

CALIFORNIA DAIRY COUNCIL

268 Market Street (Room 242), San Francisco

2311 Fairfield Avenue, Hollywood

$673.70 FROM HALF ACRE RHUBARB

(675 boxes) first season after planting. Last season I averaged $1.15 per box; to March 27 this season, $2.07; since then have been getting $1.50 to $1.65. By planting this spring or summer you should get 500 boxes per acre during high prices next winter and at least as much more for the later spring market. A perennial crop. Limited number plants for sale. Illustrated Circular Free.

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Prepared with exceptional care from choicest mill feeds, seeds, grains, etc. Rich in protein. The poultryman's best investment. Write for samples and prices.

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We Have Shipped Cuttings of Napier Fodder

(Or Elephant Grass) not only to nearly all parts of the United States, but to Canada as well.

We are growing it on our own ranch to feed our goats and are convinced that it is the most wonderful forage plant for the Great Southwest yet discovered. We are now booking orders for summer and fall delivery.

Buy from a practical rancher who grows his plants under such conditions as will produce hardy, drouth-resistant, high-productive stock that will do well on YOUR land.

Prices: $1 a doz.; $5 a hundred

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Descanso (San Diego County), Cal.

Say: 'I saw it in Orchard and Farm'

Special Sale Groceries

(For June, 1919, Only)

12 oz. jars Fruit Jams and Jellies, reg. 25c 20c
Strawberry, Raspberry, Peach, Plum, Currant, Blackberry, Loganberry.
12 oz. jar Apple Butter, reg. 25c 16c
Large 14 oz. oval cans Sardines in tomato or mustard, can 15c; per doz. $1.70
Bouillon Cubes, 12 in box 15c
Best quality Teas, Japan, Gunpowder, Eng. Breakfast, Java, lb., 40c; 3 lbs. $1.00
5 lb. pk. Argo Laundry Starch 45c
Castile Soap, bar 25c
6 bars Lenox or White Borax Soap 28c
16 oz. bottle Lemon or Vanilla Ext. 60c
Pillsbury Vitos, 1¾ lb. pkg., reg. 22c .. 17c
One of the finest breakfast foods on market.
Golden Age Macaroni, Spaghetti, Noodles 4 packages 25c
Mackerel or Tuna Fish, 3 7-oz. cans 25c
3 lbs. best Cereal and Coffee 50c
Del Monte Brand Green and Red Peppers (reg. 10c size) can 6c
Best table Peaches, 14 oz. tall cans, 2 for 25c; per doz. $1.40
10 lb. sack Leslie's Table Salt 20c
Douglas Oil, pts., 35c; qts., 67c; gal. $2.25
Covo Salad Oil, pts., 35c; qts. 67c
Our best blend Coffee, reg. 45c, lb. 35c
Royal Baking Powder, 12 oz. can 35c
4 lbs. best fresh Rolled Oats 25c
Fancy mixed Cakes, reg. 35c lb. 25c
Cal. Prunes, 4 lbs. 25c
Send cash and postage. If not entirely satisfactory, it may be returned at our expense.

DEL MORRIS SALES CO.
2320 Mission St., San Francisco, Cal.

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"I use GIANT
It gets them out cleaner"

Professional blasters know explosives. They have tried all the different makes. Many of them say "Giant gets the stumps out cleaner." John Zurr of Santa Rosa, Cal., writes:

"From the beginning of the time I have been using powder for stump blasting and other agricultural work, I have found the powder made by The Giant Powder Co. to be the most satisfactory. Each certain percentage of Giant Powder is exactly what it is represented to be."

Tell your dealer you want the genuine Giant Farm Powders—Giant Stumping or Eureka Stumping. The Giant trademark on every box is your sure protection against imitations.

It will pay you to write today for our book, "Better Farming with Giant Farm Powders." It tells scores of money-saving ways of doing farm jobs—land clearing, ditching, tree planting, etc.

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"Everything for Blasting"
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Branch Offices: Denver, Portland, Salt Lake City, Seattle, Spokane

GIANT
STUMPING FARM POWDERS EUREKA

New Tuberculosis Discoveries

THE tuberculosis eradication work, now being carried on throughout the country under the direction of the Bureau of Animal Industry, is making rapid headway. In addition to the constant addition of accredited herds to the list, valuable discoveries are being made about this plague of the animal world.

Recent federal investigations of tuberculosis under normal farm conditions continue to incriminate rodents, especially mice, as possible spreaders of the disease. Following are briefly the results of last year's studies on tuberculosis by experts of the Bureau of Animal Industry:

Thorough cleaning of stables from which tuberculous animals have been removed has been shown to be of greater importance in making buildings safe for healthy animals than the use of chemical germicides. When the cleaning is properly and thoroughly done the quantity of disinfectant needed is relatively small.

Mice which have ingested tuberculosis material are especially to be suspected as possible spreaders of the disease, as tubercle bacilli multiply enormously in their bodies and are scattered freely with their feces.

Results obtained again emphasize that this destructive disease would decline materially if relatively simple precautions against its spread were more commonly understood and practiced by owners of livestock. Among the principal measures urged by the bureau are sunny, well-ventilated barns, sanitary surroundings, application of the tuberculin test to all cattle when the health of the herd is doubtful, prompt removal of any animals which are affected, and the introduction into the herd of only such animals as are known to be free from the disease.

Vive La France Is the Winner!

Or is the winner her owner, Ovid Pickard, a Marion, Oregon, farmer of French descent, who so named her as a calf at the outbreak of the great war?

Both have won; the cow, a world's record for milk and butter fat production, and the owner, a name as a successful breeder and the foundation for prosperity.

This goes to show that it is not always the wealthy man who reaches the top in breeding. Mr. Pickard personally supervised the development of Vive La France and, during the fourth year, not only fed her himself, but milked her four times a day. His herd consists of but 15 cows.

This cow, in addition to holding other records made earlier in her career, is now undisputed senior four-year-old champion of the Jersey breed. The exact figures of Vive La France's record are as follows: 14,925 pounds of milk, 1031 pounds of butter-fat in 365 days; average percentage of butter-fat, 6.91; age at beginning of test, 4 years 7 months.

A look at Vive La France's picture will serve as a study of what a dairy cow should be to possess greatness. The illustration brings out many points by which a good dairy cow can be selected. First of all, she has great length and depth of body, which indicates capacity for handling large quantities of feed. Next in point of importance are her udder and its wonderful protruding milk veins. The excellent size and placement of teats, and the general characteristics of what a farmer would call "scale" or good balancing of parts, show her to be an animal of superior merit.

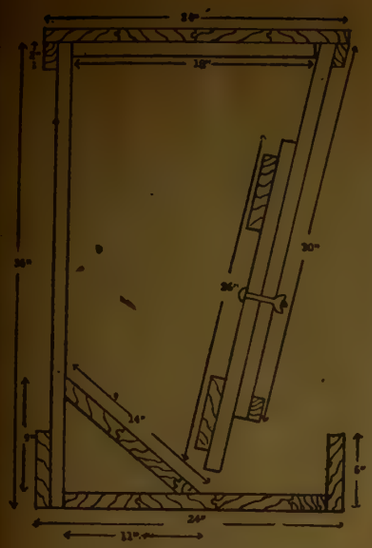
Stanchions for Raising Orphan Lambs

THE high prices of sheep and wool, as well as the general movement towards thrift and conservation have resulted in a new interest on the part of owners as well as club boys, in the derelict generally known as a "bum" lamb. One enterprising flock owner, whose sons successfully brought a bunch of these wobbly orphans past the bottle stage, came to the rescue by constructing a feeding stanchion.

In design this stanchion is much like that used for dairy cows. His arrangement is a row of ten stanchions into each of which a lamb sticks its head, and when they are all filled all are closed by one lever. The idea of the stanchion was inspired by the fact that in raising many lambs they moved around so much that much milk was wasted and some lambs drank too much.

In front of each stanchion is set a small pan containing the milk.

Orphan lambs generally are not very thrifty simply due to the fact that they don't get enough to eat; they require far more milk than is generally supposed. Cow's milk is a satisfactory substitute for ewe's milk. Sometimes water is added to cow's milk under the assumption that it is too rich for a lamb. This is a mistake, as ewe's milk is always richer than cow's milk. Lambs learn to drink very readily if a large hole is cut in the end of the nipple and the other end inserted in a pail of milk. Soon the nipple may be dispensed with.—N. W. G.



Cross Section

Of a self-feeder successfully used in connection with boys' club work. In these dimensions it does very good work with a small number of hogs and may be extended as much as desired. Length of feeder, 60 inches; divided into bins, respectively 24 inches, 15 inches and 15 inches wide, with separate sliding door for each bin; one-inch lumber was used throughout; approximate cost of lumber, $3.50; capacity, six 150-pound hogs for one week.

(Plan, Courtesy Sacramento County Farm Bureau.)

Grazing Salt Bush

A Washington sheep raiser is grazing his flocks with considerable success upon salt-bush, and has reached the conclusion that great areas of black alkali land could be planted to this bush and thus turned to profitable use. He reports that the sheep also eat salt-bush hay with relish, and that all his feeding experiments have shown that they make satisfactory gains and remain in excellent condition without any other grazing than that furnished by the salt-bush flats. A herd of 1000 head is reported to have subsisted on an area of 5 acres for more than two weeks without entirely exhausting the feed supply.

"Make the scrub the missing link in American livestock production," is the appeal of Dr. J. R. Mohler, chief of the Bureau of Animal Industry. "If we do not take this and all other precautions to maintain livestock production in proportion to our population," he warns, "we will soon become dependent upon foreign countries for livestock products."

The cattle fever tick will be permanently driven from American soil within the next few years. At least this is the belief of officials of the Bureau of Animal Industry, United States Department of Agriculture, who have returned from the conference of tick eradicators at New Orleans.

Secretary of Agriculture Houston, in his annual report, pointed out that for a considerable period of time the world will need more than the normal production of livestock, and especially of fats. Looks pretty favorable for the pork producer, doesn't it?

Losses from hog cholera declined greatly in the four years 1914 to 1917, and a further reduction is expected when 1918 figures are compiled.

The Motor Truck a Farmer Would Build

IF FARMERS pooled their ideas for building a practical motor truck that would best serve their everyday hauling needs, it would offer nothing not now found in the International Motor Trucks.

The reason is plain. The International is the result of a thorough knowledge of farm conditions. This Company knows country roads. Ample provision has been made to withstand the strain and stress of highways that place an unusual tax on parts subject to wear. Only the best materials are used, after thorough test. The truck is simple and durable.

International Motor Trucks

will do the work expected of them at a cost farmers can afford. They give a service that is reliable, prompt and economical in the severest test of all—**steady performance in actual daily use.** They have ample power for any emergency and can be depended upon to keep going every day in the year.

Farmers everywhere find an International Motor Truck a source of profit from the outset. It saves time, labor and distance. Markets are brought to the door and better prices are possible for farm produce, which retains all its freshness. The item of return loads is an important one from the standpoints of both business and convenience.

There are four sizes of International Motor Trucks —1,500, 2,000, 3,000 and 4,000 pounds capacity, with bodies suitable for every kind of hauling.

We have a dealer, a branch house, or a service station somewhere near you, where the line can be seen, or we will send full information promptly if you will write us.

The Full Line of International Harvester Quality Machines

Grain Harvesting Machines
Binders, Push Binders, Headers, Rice Binders, Harvester-Threshers, Reapers, Shockers, Threshers

Tillage Implements
Disk Harrows, Tractor Harrows, Spring-Tooth Harrows, Peg-Tooth Harrows, Orchard Harrows, Cultivators

Planting and Seeding Machines
Corn Planters, Corn Drills, Grain Drills, Broadcast Seeders, Alfalfa and Grass Seed Drills, Fertilizer and Lime Sowers

Haying Machines
Mowers, Side Delivery Rakes, Comb. Side Rakes & Tedders, Tedders, Loaders (All types), Baling Presses, Rakes, Sweep Rakes, Stackers, Comb. Sweep Rakes & Stackers, Bunchers

Belt Machines
Ensilage Cutters, Corn Shellers, Huskers and Shredders, Hay Presses, Stone Burr Mills, Threshers, Feed Grinders, Cream Separators

Power Machines
Kerosene Engines, Gasoline Engines, Kerosene Tractors, Motor Trucks, Motor Cultivators

Corn Machines
Planters, Motor Cultivators, Drills, Ensilage Cutters, Cultivators, Binders, Pickers, Shellers, Husker-Shredders

Dairy Equipment
Cream Separators (Hand), Cream Separators (Belted), Kerosene Engines, Motor Trucks, Gasoline Engines

Other Farm Equipment
Manure Spreaders, Straw Spreading Attachment, Farm Wagons, Stalk Cutters, Farm Trucks, Knife Grinders, Tractor Hitches, Binder Twine

International Harvester Company of America
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CHICAGO U S A

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Cream Separators, Milk Coolers, Milking Machines, Milk Bottles, Cans, Brushes, Bottle Fillers, everything for handling milk.

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(California)

200,000 Broilers Wanted

Ten reasons why the National Poultry Co., Inc., should receive your poultry products.

First: The National Poultry Company has set a standard and established a reputation which must be maintained. It will be maintained, because the same principles that have given character to our establishment since we were doing business in a 25-foot, one-story building are maintained in our modern plant.

Second: The National Poultry Company's reputation is built on fair dealings, honest weights and quick remittances, covering a period of ten years. Ask your own banker about us.

Third: This explains why the National Poultry Company's methods stand out so strongly, why we were unanimously chosen by the Poultry Producers' Association of Southern California, a body of 530 leading poultry men, to exclusively handle 100,000 of their broilers.

Fourth: This is why thousands of California, Arizona, New Mexico and Nevada producers ship us regularly every season.

Fifth: Because we are the largest exclusive wholesale poultry plant on the Pacific Coast. Our capacity is 32,000 live broilers on feed at one time. We have our own cold storage plant on our premises. The only poultry firm in Los Angeles having trackage to the door for handling carload lots.

Sixth: It has been our conviction that in the poultry business, as elsewhere, patronage will always go where it is best treated.

Seventh: It has been our conviction also that the more the producer gets out of his shipment, the better showing we can make for ourselves in increased sales. The new business method is the increased volume of business on a small margin of profit.

Eighth: The National Poultry Company realizes its obligations to continue this same method with increasing usefulness to producers.

Ninth: It is unthinkable now that we should imperil our position by abandoning the policy that has made us.

Tenth: The above methods have always been the standard which J. Will Blackman, president of the National Poultry Company, has applied in building up this business.

WRITE US FOR QUOTATIONS

National Poultry Company
(Inc.)
J. WILL BLACKMAN, President.
611 East Third St. Los Angeles.
"Ask any man who has shipped to us."

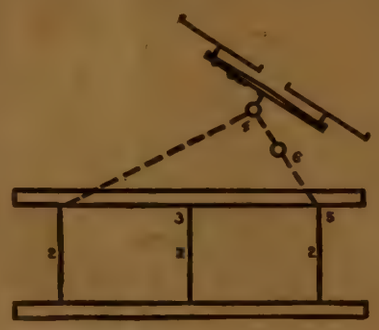
SYSTEM in shop office and field

A Simple Road Drag

SIMPLICITY is more frequently a virtue than a handicap, particularly in the case of farm machinery. One of the simplest and at the same time, most efficient farm implements ever invented is the split-log road drag. Its regular use by a skilled operator will keep in good condition almost any dirt road which has been graded and leveled.

Here is a simple and inexpensive way to make a drag:

First, secure a log, nine feet long and ten to twelve inches thick; then split it and set the two lengths on edge, thirty to thirty-six inches apart, placing both flat sides to the front. Figures 2, 2, 2 in the accompanying diagram represent three oak or edge bars. These bars, as shown, hold the pieces of split log together. The ends of the bars are wedged firmly in six 2-inch auger holes, three of which are bored in each log. The dotted lines (see diagram) are chains or strong wire. Figures 4



and 6 indicate rings to connect the doubletree clevis.

The drag should be hitched at figure 4, and the operator should stand on a plank laid on the cross bars at point on the drag marked 3, for ordinary work. For ditch cleaning, or to make the drag throw more dirt to the left, the drag should be hitched at the ring, 6, and the operator should stand at 5.

How It Is Used

The principal factor in successfully operating a road drag is skill on the part of the operator.

Under ordinary circumstances the position of the hitching link on the draw chain should be such that the runners will make an angle of from 60 degrees to 75 degrees with the center line of the road, or in other words, a skew angle of from 15 degrees to 30 degrees. It is apparent that by shifting the position of the hitching link the angle of skew may be increased or diminished as the conditions require. When dragging immediately over ruts, or down the center of the road after the sides have been dragged, it is usually preferable to have the hitching link at the center of the chain and to run the drag without skew.

When the principal purpose of the dragging is to increase the crown of the road, the drag should be sufficiently skewed to discharge all material as rapidly as it is collected on the runners. On the other hand, if depressions occur in the road surface, the skew may be reduced to a minimum, so that they will be filled.

Saving Gnawed Trees

THE problem of saving trees that have been gnawed by rodents is one that confronts many orchardists. Fruit tree specialists recommend the "bridge graft."

Trees that have been seriously injured by mice or rabbits eating the bark and sapwood at the surface of the ground, can usually be saved by bridge grafting.

First trim off the gnawed parts of the bark with a sharp knife, leaving the edges smooth. Then take from the tree a twig of last summer's growth about as thick as a lead pencil and long enough to extend an inch and one-half above and below the gnawed part.

Both above and below the gnawed part cut out a strip of bark an inch and one-half long and as wide as the twig or graft is thick. Trim both ends of the graft on the same side by paring it down to about half its thickness for a length of about 2 inches and then fit the prepared ends into the bark cuts above and below the injury.

Fasten each end of the graft to the tree by driving in a very fine tack or brad not much thicker than a pin. Cover the ends of the graft and all cut surfaces with grafting wax. A union between the graft and tree will then take place and thus the gnawed part will be bridged over.

In very bad cases of injury it may be necessary to fasten the lower end of the graft into one of the tree roots. Place such a graft every 2 inches across the injured part.

Home Made Soap

The war has brought a revival of many homely practices which marked the thrift of our fathers and grandfathers. Among these is the making of soap from excess kitchen fat. It is not a very difficult matter to make soap. Here are the directions:

Use fats which cannot be used for cooking.

First, clarify the fat. Melt it up and add water, bring to a boil, and allow to cool. The fat will form a solid cake on the top of the water. The impurities may be removed from the bottom of the fat. Melt fat again and heat until all water has evaporated; that is, until bubbling stops. Then slice a medium-sized potato into the fat and strain through a dry piece of cheese cloth.

To each 5 pounds of lukewarm grease use

1 small can lye
1 quart cold water
½ cup hot water
3 tablespoons borax
¼ cup household ammonia
2 tablespoons sugar
1 teaspoon salt

Mix lye and cold water; let stand until cold, stirring occasionally. Mix ½ cup hot water with 3 tablespoons borax. Let this cool and add ¼ cup household ammonia, 2 tablespoons sugar, and 1 teaspoon salt. Pour lye into grease slowly, stirring continually with a wooden spoon or spatula. Add other mixture; stir until light and thick. Pour into an enameled can lined with paraffin paper. Grease before soap gets cold.—Louise F. Lacey.

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Irrigation in Imperial Valley

New and advanced methods of soil and water management paying big dividends in the American "Valley of the Nile."

By Wm. S. Trewin

THE flooding system of irrigating, used in many communities in California, is doomed and will be replaced entirely by the corrugation method, if ranchers generally follow the advice of Farm Advisor W. O. Johnson, who recently conducted a ranchers' excursion over Imperial county demonstrating the relative efficiency of the two methods of irrigating. Mr. Johnson states that his conclusions are applicable wherever the flooding system is used. The relation between subsoiling and irrigation also was discussed.

Numerous places were visited where the experiment is being tried and it was very noticeable that when the corrugation method was used, instead of flooding, greater crop yields were gained, and in several cases land was shown yielding good crops which would yield nothing several years ago under the flood system.

A "corrugated" field is one which is ridged by means of a marking machine, either home-made or manufactured, into tiny ditches, about three or four inches apart and not more than two and one-half to four inches deep. If the land, upon being surveyed, is found to have an irregular fall, the corrugations are made to follow the fall, even though considerably curved. Usually they are supplied with water a few at a time from a supply ditch or surface-pipe, and the water allowed to run slowly to the lower end, where any surplus is caught by another ditch. When one small section has been thus watered, the stream is moved to another section.

Method of Handling Water

Experienced irrigators frequently make use of straw or manure, or other litter to control the small streams, as loose dirt is soon cut away, allowing too much water to run through each little ditch. Canvas or other temporary dams are sometimes used also to control the water coming from the main supply ditch. Successful corrugation irrigating requires some experience on the part of the operator, and adeptness is gained only by practice, the irrigator facing the necessity of devising control methods suited to his particular fall and type of soil. If there is a very heavy fall and the soil is loose, it may be necessary to use small dams to prevent erosion. On some soils, no straw need be used; others will wash badly unless some means is employed to prevent cutting.

Many Imperial farmers have lately been subsoiling and in every case it was pointed out the rancher did not have to water his land as often as when merely plowed. In some cases ranchers stated that they were willing to wager that crops could be obtained from the hard alkali soil if it was in such condition that it could be subsoiled and watered by the corrugating system of irrigating.

One interesting ranch was that of J. L. and A. H. Taecker. This land was subsoiled in April, 1918; lay fallow until October; then was double-disked, floated and drilled crosswise with 75 pounds of wheat per acre. The Taeckers expect a yield of 18 sacks to the acre (140 pounds to the sack). They subsoil and do not plow; use corrugations and do not flood.

Some Additional Proofs

The Coats-Williamson ranch, managed by O'Neill and MacKenzie, furnished another proof for the arguments of Mr. Johnson. Mr. MacKenzie stated that the barley had to be watered every five days when the ground was plowed, but that after subsoiling had been practiced, it was necessary to water the land only once a month. For three years crops had been poor, but after subsoiling and use of the corrugation system of irrigation, splendid results have been obtained, as shown by the present crop. The barley field on this ranch has a fall from east to west of 10 feet to the mile.

The saving in number of irrigations and amount of water used, as well as the freedom from plowing, are among the points which Dr. Johnson uses to clinch his arguments.

Poor Land Reclaimed

Corrugations, with land bordered in the direction of the greatest fall, are urged, and in support of his theory, he points to thousands of acres in the vicinity of Calipatria, where corn and cotton were both unsuccessfully tried. With the corrugated method excellent results have been obtained and the land virtually reclaimed. Another point which is urged as an argument in favor of the corrugated method is that the flooding method in many cases causes the land to bake and to sour. This is avoided by the use of corrugations.

J. N. Renfrew, whose ranch is near Niland, has built two implements for corrugating the land, each capable of being adjusted so that it may be used either in hard or soft soil.

Bigger yields, less work, less water expense and better prepared lands result from the introduction of the corrugating method in place of the old-time flooding method, concludes Dr. Johnson.

EDITOR'S NOTE—The corrugation method is widely used in parts of Oregon and Washington, as well as in Idaho, Utah and other intermountain States. It is considered the most economical method known where water is scarce or expensive, especially for the irrigation of large fields, and is successfully used in many localities for alfalfa, the only objection in this case being that the ground is very rough for the mowing machines. (Home-made "markers" are frequently employed for ridging the ground.)

Description and further details will be published in an early issue of Orchard and Farm.

If you have occasion to fight grasshoppers with the "dozer," try hanging lights inside the machine. The idea has been used with good success in Arizona where a great many more insects were caught with the lights than without them.

Nature's Remedy

Verily there is a use for everything. Noting that no vegetation grows around Owens Lake, California, because of the chemicals contained in the water, officials of the Southern Pacific Railroad hit upon the scheme of filling oil cars with the lake water and sprinkling it along the right of way on the San Joaquin division, thereby killing the weeds which are the bug-bear of the maintenance expert.

No Ice Needed

Pittman Concrete Iceless Refrigerators

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Mrs. A. F. Cook of Dunnigan, California, writes:

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HAROLD SOMERS, 160 De Kalb Ave., Brooklyn, N. Y.

Kill the Poultry Yard "Cooties"

A convenient summary of the various methods employed in the eradication of poultry lice and mites, with directions for the use of powders and sprays recommended by the Government experts.

THE baby chick which "hasn't scratched yet" may be considered very fortunate, for ten chances to one he will be scratching before he is many days old, not only for bugs and worms, but to rid himself of the "cooties" which will soon serve to make his life miserable.

No matter how clean the poultry yard nor how vigilant the owner, these insidious enemies will sometimes secure a foothold before their presence is actually recognized.

Prevention is, of course, more than half the battle. Regular spraying of the roosts with disinfectant or kerosene emulsion should be a part of every poultryman's program. To know the monetary loss traceable to poultry pests is to agree that it pays to combat them.

Fowl lice and mites reduce egg production, hinder the growth and reduce the quality of flesh of all classes of poultry. Mites are particularly bad among farm fowl, as these blood-sucking insects often gain a firm foothold in the flock before the farmer is aware of their presence. The hens become irritable and decline in egg production and condition as a result of losing blood. In heavily infested coops it is not unusual for the chickens to become droopy and weak, with pale combs and wattles.

Setting hens desert their nests and thus ruin the eggs, while in extreme cases they are found dead on the nests, being killed outright by the attack of thousands of mites. The mites feed almost entirely at night, except they attack hens on the nests during the daytime. They secrete themselves in cracks and crevices around the chicken house during the day, and hence their presence often is overlooked until a heavy infestation has developed.

Rout Mites From Roosts

In controlling mites, it is first of all essential to drive the pests from the roosts, nests and interior of the poultry house, which should be sprayed with a mixture of one part kerosene to four parts of crude petroleum. Ordinarily one application is sufficient, but as an extra precaution it is advisable to spray a second time about one month after the first treatment. Poultry should be kept out of the treated buildings until the material has well dried into the wood.

Arsenical dip, as a spray, such as is used to destroy cattle ticks, is also fairly satisfactory as a control for chicken mites; several applications are required to eradicate the mites from the poultry roosts. The mites which cause scaly leg usually can be eradicated by applying crude petroleum to the legs with a brush or dipping them into this oil. One treatment is usually enough, although in severe cases it may be repeated at the end of 30 days.

Lice Live on Poultry

If poultry escape infestations of mites, they are still exposed to visitations from lice, which, unlike the mites, remain constantly with the fowl. More than 40 different kinds of lice attack domestic fowls and feed on portions of the feathers or on scales from the skin, their presence in any considerable number resulting in serious injury.

In California the loss due to lice probably is the greatest among young chickens. Chickens hatched after April 1 and brooded by hens experience a high mortality, much of which appears to be due directly to lice, the insects being transmitted from the mother to her young. Body lice, head lice, and feather lice, like the three musketeers, usually are on the lookout for trouble, and lots of it.

Sodium fluorid means sure and instantaneous death to poultry lice and in either the dust or dip form it is the practical control. This material in the dust form is applied by the "pinch" method, which consists in holding the fowl by the legs or wings in one hand, while with the other hand a small pinch of the chemical is placed on the head, one on the neck, two on the back, one on the breast, one on the tail, one near the vent, one on either thigh, and one on the underside of each wing when spread. This material may also be applied in a shaker consisting of a tin can with nail holes punched in the bottom, the chemical being mixed with road dust or flour. Where applied in this way more or less dust floats into the air, while it requires two persons to dust the fowl, one holding the feathers open while the other shakes in the powder.

The "Pinch Method" of Applying Powder

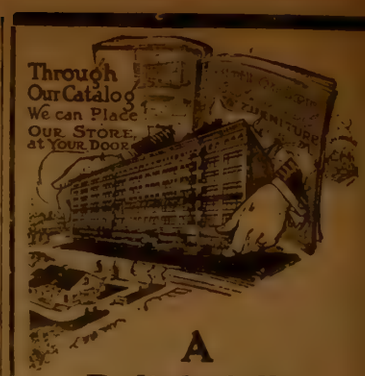
If the chickens are held in this manner, less loss of material results and a large number of birds may be treated in a short period of time, with little inconvenience to the operator.

Control by Dipping

The sodium fluorid is best applied as a dip during mild weather. A warm, sunny day is essential so that the fowls will dry quickly. From three-quarters to one ounce of commercial sodium fluorid, or two-thirds ounce of chemically pure sodium fluorid, should be added to each gallon of tepid water in a tub.

In dipping the fowl, it is best to hold the wings back with the left

(Continued on Page 27)



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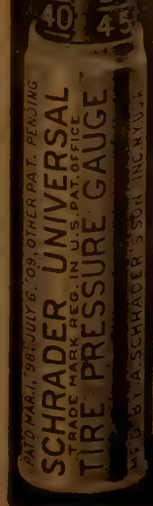

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Unless you maintain the air in your tires to the right pressure you cannot expect them to last.

Tires with not enough air in them not only wear out before their time, but they cause a tremendous waste of gasoline.

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Ask your dealer to show you the SCHRADER UNIVERSAL PUMP CONNECTION also. It makes tire-pumping and tire-testing easy.

Burbank's Success

(Continued from Page 5)

Burbank scouts the idea that hard work is a cause of disease and bodily deterioration. Hard work combined with wrong living may be, he admits. But he worked 14 hours a day in his weakened condition as a youth, and gained weight on it! However, he does point out that wasted effort is the cause of most failures. For hard work without concentration may be more detrimental than otherwise.

In a recent statement for The American Magazine, Mr. Burbank gave a convincing argument in favor of confining one's thought and effort to the essentials. "In the course of ten years," he pointed out, "there are just so many hours; and the average normal man has just so much energy to spend. Where he will be; how he will stand in the community at the end of the ten years, will depend almost wholly on the use he has made of the hours and his capital of energy.

"I have little sympathy for triers, slackers and whiners. I prefer the doers. Providence and nature intended every normal human being to render the service for which he is fitted. It has been proved time and again that the normal man has in him the latent capacity for far greater things than he accomplishes in his daily routine. It is only a question of arousing this capacity and establishing the habit of putting it to its best uses constantly.

"Sporadic excellence and improvement will not get a man very far. Like the plant breeder, he must learn how to fix the new traits and characteristics he develops so that the improvement will be a lasting one that can be transmitted to future generations."

To say that Burbank understands plants is to mention only the surface indications of his insight. For he not only understands them, but finds in them inspiration and example. Have you ever thought of a plant in just the way that is indicated by this statement from Mr. Burbank?

"Perhaps I have learned persistence from the plants with which I work. Their tenacity of purpose is simply astounding. Nothing can discourage them. Under the most adverse circumstances they will strive valiantly to fulfill their mission in life. Alongside of the will of the plant to live and bear fruit, man's will is as the feather is to the steel bar. Yet the human will can be developed through steady exercise. If we will only persist in doing the hard things we know we ought to do, we will be astonished at the increase in our will power, and delighted to find how much easier the hard task becomes through constant repetition."

The sublime power of human will; the ability self-consciously to increase one's capacity and literally to evolutionize through proper application are exemplified in every accomplishment of Luther Burbank. Walter V. Woehlke, who writes an interesting analysis of Burbank's work, published on the occasion of the plant-breeder's seventieth birthday, likens him to Actaeus, who lived close to the soil and received new strength from daily contact with it. Despite his delicate constitution and early setbacks, he has worked from ten to fourteen hours a day steadily, with but one interruption in more than forty years. Once when the physicians gave him just eighteen months to live, he smiled and went off into the mountains, followed a diet of his own devising, and returned in three weeks, ready for twenty more years of uninterrupted labor. He carries no wizards' wand, possesses no magic power. What he has done he has accomplished despite the handicaps of ill health and abject initial poverty. And he believes that others, if they only have the will, can reach the heights of their vocation by concentration, hard work, and persistence.

The cream of cream separator prosperity goes to De Laval users

There was never greater need than right now for the best separator, skimming cleanest, having greatest capacity, turning easiest, requiring least care, and producing the most perfect product. In all these respects the De Laval has no equal. Take nothing for granted, simply let it be demonstrated to you. See the local De Laval agent or address the nearest general office.

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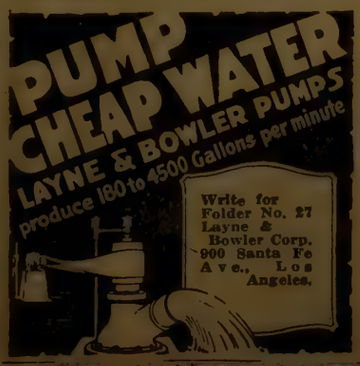

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EVERY MAIL now brings us orders and inquiries for the "Sahara Drier." WHY? Because it meets the need of the small as well as the largest Grower. It is absolute protection against loss from adverse weather conditions, overripe fruits, etc. A "Sahara Dried" product will retain its flavor and nutritive value indefinitely. It can be stored or placed upon the market.

The DEPARTMENT OF AGRICULTURE is now advocating the artificial drying of Fruits and Vegetables because of the uniform products and cleanliness. No more exposure to the wind and dust—the insects and worms. Within a year or so a law will be passed compelling growers to market artificially dried products. Sun dried products sometimes develop worms and insects, because the sun heat is not enough to kill the eggs deposited during drying. With the "Sahara Drier" the fruit is subject to a heat that kills these germs and therefore makes a better product.

A PROMINENT GROWER, Mr. D. B. Gray of Fowler, is now running 40 tons of damaged raisins through a "Sahara Drier" at his ranch. These were damaged by the early rains last Fall. He now has a marketable product and paid the cost of his Drier several times over. Place your order now. Our factory will be taxed to its capacity within thirty days, and there is going to be a lot of disappointed Growers. We guarantee our Drier or your money back. Where is there another manufacturer that will do this? Our patented process makes this possible. See our Representatives:

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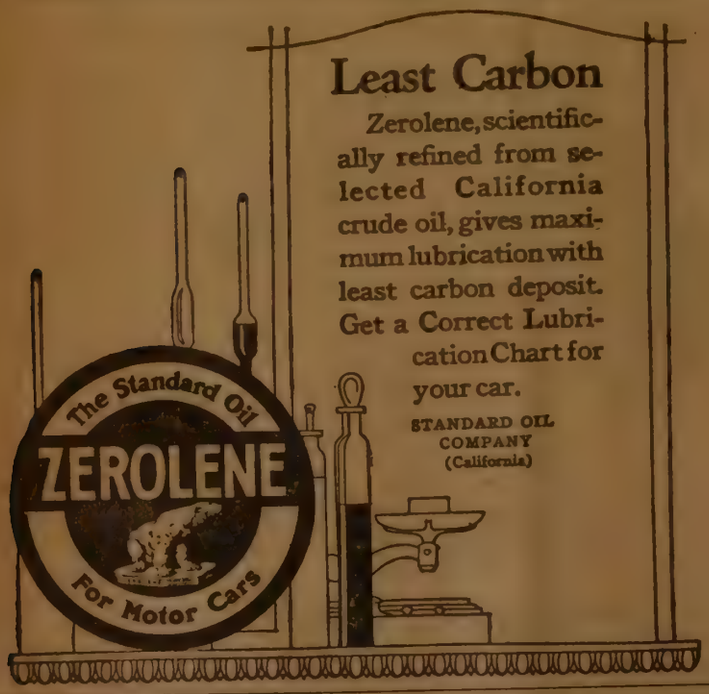

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Sunflowers as a Forage Crop

(Continued from Page 4)

the question is to sow in rows a sufficient distance apart for the use of the regular cultivating equipment. The plants should be fairly close together in the rows, a distance of 3 to 4 inches being recommended; if planted further apart, it has been found, the stalks become coarse and woody.

On Dry Farms

Under dry-land conditions the best yields are to be expected by seeding the sunflowers in rows 36 to 42 inches apart, using 5 to 7 pounds of seed per acre and thinning the stand to one plant for every 10 or 15 inches of the row. The yields of green forage reported range from 5 to 10 tons per acre. Check-rowing has been found to be very satisfactory in dry-farming, the seed being dropped two or three to a hill, and the rows cultivated both ways. The depth of seeding is usually about two inches, either on irrigated or dry land.

Cultivation

The field should be kept free from weeds and the soil well mulched at all times. Ordinarily the field is cultivated as soon as the crop is up, followed by cultivation every two or three weeks until the plants are 3 to 4 feet high. The same practice employed in corn growing may be used, and the corn machinery is suitable for cultivating sunflowers.

Irrigation

After making preliminary investigations, Mr. Ray of the Colorado station gave the following suggestions in regard to irrigation:

The amount of irrigation water needed by sunflowers and the time of applying the water will depend entirely upon local conditions. Sometimes it is necessary to "irrigate the seed up" and again water may not be needed until two or three weeks after planting. Most growers are of the opinion that sunflowers do not need as much water as does corn grown for silage.

Harvesting

The best time for harvesting sunflowers for silage is a matter of some uncertainty. The Montana Station recommends cutting when one-half to three-fourths of the seed are in the milk stage, stating that if cut before this time the stalks are quite watery and a considerable loss will occur. The Nevada Station recommends cutting when the seed is in the late milk stage. Both of these stations have obtained excellent results with dairy cows fed on silage cut at these stages. One dairyman in western Colorado who has fed sunflower silage for four seasons claims, however, that if the plants are left standing until after the pollen falls, a resinous flavor develops in the plant and is noticeable in milk when such silage is fed to dairy cows. Obviously, where the silage is to be fed to sheep or beef cattle, this factor would not enter and the sunflowers could be left in the field until in the milk stage. It is quite probable that the feeding value of the silage will increase as the plants develop toward maturity and hence would be most valuable at the late milk stage.

Making the Ensilage

The corn binder is quite generally used for harvesting the sunflowers, says the Colorado report. Where the area is small, they may be cut with a corn knife or a sharp-handled hoe.

In making silage the sunflower plants should be cut into lengths of from ½ to ¾ of an inch. It is essential that the plants be cut into very small pieces and that they be very well packed in the silo. No water need be added, unless the plants have become very ripe, for ordinarily the plants contain sufficient water to insure good packing. Any good corn silage cutter can be used for cutting sunflowers.

When the plants are cut before they have reached the blossoming stage, sunflower silage contains a great deal of water. Such silage is apt to give some trouble in cold regions due to freezing in the silo. This trouble is not experienced, however, where the sunflowers are cut when the seed is in the milk stage.

What a California Authority Says About Sunflowers

Note: Replying to our request for information concerning the use of sunflowers in California, Professor P. B. Kennedy of the State Agricultural Experiment Station, an authority on grasses and forage plants, kindly furnished us with the following statement:

IN CANADA sunflowers have been grown to a considerable extent, and there they are sometimes put into the silo. They undoubtedly could be profitably grown in the Antelope Valley or similar localities providing dry farming methods were used; namely, careful conservation of the moisture the previous season. The plant is extremely drought resistant and with careful cultivation will grow as well as the sorghums during the summer months. It has an advantage over the latter in that it is not easily affected by frost or cold nights.

Under irrigation a yield of 36 tons per acre of green material may be expected. The crop is cut when the seeds are from one-half to three-fourths in the milk stage. The harvesting may be done by hand or with a corn binder. The method of placing them in the silo is the same as for corn or sorghum.

Under dry conditions one could not expect more than from five to ten tons of green forage per acre. It has been demonstrated that sunflowers will withstand a considerable amount of alkali in the soil. The plant likes a calcareous soil with plenty of potash, both of which are abundant in most sections of California.

The seeds are excellent for chicken feed and are a special favorite for feeding birds, such as parrots in zoological gardens and elsewhere. The leaves are of fair value as fodder and the flowers yield a good deal of honey. Perhaps 50 bushels of seed could be secured from an acre. The chief countries that grow sunflowers are India and Russia.

Killing Snails With Liquid Fire

(Continued from Page 8)

Erigonum fasciculatum (wild buckwheat), Avena sps. (wild oats), Atriplex semibaccata (saltgrass), Agave sps., Cotyledon sps., Mesembryanthemum sps. and other succulents.

The history of this snail, however, is that in the Mediterranean region in Sicily and elsewhere in Southern Europe it is a serious pest, especially on citrus buds and blossoms. Migration to such hosts as this generally occurs after the native vegetation has dried up. As far as we are able to determine, no spread to citrus orchards in this country has occurred, and eradication measures are therefore being employed while the pest is confined to this comparatively isolated portion of the county.

Burning First Tried

The method which first suggested itself was to burn over the area, wherever it was covered with native or other plants which could be destroyed without unnecessary pecuniary loss to the property owners concerned, and to treat by spraying all infested trees or plants which for the present at least, it did not seem advisable to destroy. Probably three-fourths of the area has, up to date, been burned over, various methods being employed to facilitate burning on bare ground or where the vegetation was not particularly inflammable. One method was to spray plants and brush with distillate and ignite. This scheme was reasonably successful, but rather expensive.

A plumber's torch was then used, but was abandoned as too small and therefore too slow in its results to be practicable. This was improved upon by converting an ordinary knapsack spray pump into a torch by the addition of a three-eighths inch iron rod and a double nozzle arrangement. This apparatus was used with a combination of automobile crank case cleanings (strained) and distillate or kerosene equal parts. Although this equipment exerted a yellow flame indicating imperfect combustion, it was very effective and left no live snails in its wake.

The Liquid Fire

The torch which we are using now, an improvement upon the spray pump arrangement, has been loaned to this county by the State Horticultural Commission. It is the type which was used for grasshopper control in the Philippines and also for the cremation of bodies of persons who died of plague. It consists of a pressure tank of about fifteen gallons capacity, capable of maintaining one hundred pounds pressure, carrying either one or two leads of hose with one or two torches as desired. The burner proper is equipped with a vaporizing coil, and operates upon the principle of a gasoline stove, producing a blue flame. The fuel used, however, is kerosene.

This torch is being used just now under the most unfavorable conditions possible, in that the vegetation is green and succulent and would be impossible to burn under ordinary methods.

Spraying experiments have been carried on with mercury bichloride (one to one thousand solution) and with alum solution in proportions of one pound of alum to eight gallons of water. Good kills were obtained from the use of both solutions, the best results being from the mercury bichloride. Copper sulphate solution (one to fifty) has been suggested to us for this purpose and will be tried in the near future. However, the torch is extremely effective where it is not necessary to spare the vegetation.

A Different Plan

At the California Delta Farms, a policy unique in land settlement is being pursued, with gratifying results to investors. The owners agree, upon making a sale, to rent the land for the buyer without charge and to apply the revenue received, either cash or crop share basis, on the remaining payments. Those who have observed the methods followed in the past in connection with different land settlement schemes are unanimous in their agreement that this plan indicates great faith on the part of the owners in the productive power of the soil. As a result of the plan, many buyers have been found who would not otherwise have invested, because of inability immediately to take up their residence upon the land.

Cooties of the Poultry Yard

(Continued from Page 24)

hand and quickly submerge the bird in the solution, leaving the head out while the feathers are thoroughly ruffled with the other hand so as to allow the solution to penetrate to the skin on different parts of the bird. The head is then ducked once or twice, the bird is lifted out of the bath and allow to drain a few seconds, and then is released. Only 30 to 45 seconds are required to dip a fowl, while the expense for material is less than one-half cent a bird. The compound is very destructive to lice without producing any ill-effects on the chickens. The chemical may be obtained from a druggist.

Other controls for lice, such as application of flowers of sulphur in the dust form, destroy many of the pests, although a thorough and careful application of the sulphur is required in order to assure complete destruction. As a rule about six pounds of the material is needed for 100 fowls, the sulphur costing about 10 cents a pound. Dipping the fowls in a solution made by dissolving one ounce of laundry soap in a gallon of water will destroy all the lice present, but a second dipping ten days later is necessary in order to destroy the lice that have hatched from eggs which were not killed by the initial treatment. There is danger of producing colds by this method, unless the weather is favorable.

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By using the Moline-Universal Tractor and Moline Tractor implements, you can farm more land, better, easier and at less expense than you ever did before. Farmers in all parts of the country are now making more money through the use of the Moline-Universal Tractor and Moline Tractor Implements. Unsolicited testimony from owners is the best proof of satisfactory performance. Read the following expressions from Moline owners:

"The Moline-Universal has done for me what two men and twelve horses would have done at less expense than one man and six horses." Jesse L. Bonsall, Scotia, Nebr.

"It saved me the price of seven horses. It has created a greater desire for farming." Arthur Weis, Reddick, Ill.

"I have been able to dispense with two men and some hired help in the house because of the Moline-Universal Tractor." Wm. P. Johnson, Lovington, Ill.

"It has saved me hiring one man and keeping five extra horses." Henry Hilbert, Charlotte, Ia.

"Earned me $1,700 in 60 days and established me in a good paying business." C. J. Hawley, Seargent Bluff, Ia.

"I accomplished about three times as much as I would had I not had the Moline-Universal. For me to go back to horse power would be the same as doing without my automobile." F. N. Miller, Marysville, Mo.

"It has spoiled me because I do not care about driving horses any more." S. R. Moben, Westphalia, Kans.

"A big time saver and makes hard work a pleasure." Millard Belt, Rockville, Md.

"It has accomplished just 100 per cent more than I expected it. As a hill climber there is no equal." O. H. Barkledge, Washington, Mo.

"I can't work horses any more as I do my work so much easier with the Moline-Universal." Henry Shatz, Sheridan, Ore.

"During my ownership of the Moline-Universal Tractor my farm work has been made more pleasant and profitable." S. M. Pinckney, College Farm, Orangeburg, S. C.

"My wife and I have farmed this year by ourselves—something we never did before." H. E. Hartzell, New Weston, Ohio.

"It has saved me $600 in labor this season." Ira Brinkman, Shades, Ind.

If space would permit we could fill up this entire paper with letters from satisfied owners of Moline-Universal Tractors. Write for full information and large list of farmers who are making more money with less hard work by farming the Moline way.

Moline Plow Co., Moline, Ill.

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HELPFUL HINTS for THE HOUSEWIFE

Edited by Isabel Sinclair

The Home is the Hub of the Universe

Testing Silks

THE nature of the silk fiber is such that it will absorb large amounts of foreign material Textile chemists have made the most of this property in order to meet the demand for cheap fabrics of good appearance, without regard to their wearing qualities.

That they have been highly successful in their efforts is proved by the fact that much of the silk which we buy contains more of the foreign material technically known as weighting, than of the silk itself. Among the substances used for this weighting are salts of tin, iron and aluminum, sugar, gelatin, glue and various dye stuffs.

Small amounts of these are not harmful, and may even be beneficial, but large amounts very seriously impair the wearing qualities of the silk. This may be because the fibers have been so stretched as to be weakened or because they are worn through by the sharp edges of crystals of mineral salts.

To determine the exact amount of weighting in silk requires careful methods of analysis beyond the reach of the housewife, but its presence may be detected by burning a sample of the fabric. Silk itself burns similarly to wool, giving as a residue a gummy ball. If, however, large amounts of weighting are present, there remains after ignition, a blackened, brittle fabric, retaining the shape of the original sample.—Evelyn G. Halliday.

Aunt Jane Says

"We always used to cover our kitchen and pantry shelves with oilcloth or at least fancy paper, but now I'm inclined to agree with my niece that it's not very sanitary. In fact, the better way is undoubtedly to paint them. Painted shelves can be wiped with a damp cloth every day if necessary. Paper is always a bid for dust and vermin. The old fashioned ways are sometimes best, but this is a case where I will concede that the 'new idea' is the more sensible."

White to Cream

When shopping for cream lace one often finds a desirable piece in white. This may easily be changed to cream.

Mix a teaspoon of ochre powder with one teaspoon of corn starch. Put the mixture in a box with the lace which has been unfolded and laid in loosely. The box must be large enough to allow plenty of room. Fasten the cover on and shake vigorously for a minute, then remove the lace and brush out the surplus powder.

If a deeper cream color is desired a larger proportion of ochre should be used.—Charlotte E. Carpenter.

Creamed Cheese and Eggs

3 hard-boiled eggs.	Speck of Cayenne.
1 tablespoon flour.	¼ cup or 1 ounce grated cheese.
1 cup milk.	4 slices of toast.
½ teaspoon salt.	

Make a thin white sauce with the flour and milk and seasonings. Add the cheese and stir until melted. Chop the whites and add them to the sauce. Pour the sauce over the toast, force the yolks through a potato ricer or strainer, sprinkle over the toast.

Pointers on Preserving Poultry Products

IT IS not too early to begin preserving eggs for use next fall and winter. While prices may be lower later in the summer, still they are certain to advance again by late fall and the cost of preserving is so small that a difference of 10 or 15 cents a dozen in the selling price is of little moment. It is wiser to use eggs in moderation during the entire twelve months than to serve them so much in the early spring that the family grows tired of them.

When the hens are laying freely and eggs are abundant and cheap the thrifty housewife makes provision for the future.

Fresh clean eggs properly preserved can be used satisfactorily for all purposes in cooking and for the table. When eggs preserved in water glass are to be boiled, a small hole should be made in the shell with a pin at the large end before placing them in the water. This is done to allow the air in the egg to escape, when heated, and to prevent cracking.

How to Preserve Eggs

Fresh eggs properly preserved may be kept from eight to twelve months in excellent condition and used with good results. Eggs laid during April, May and early June have been found to keep better than those laid later in the season. If satisfactory results are to be obtained the eggs should be fresh and clean and, if possible, infertile. Eggs that float when placed in the solution are not fresh and therefore cannot be preserved. When an egg is only slightly soiled, a cloth dampened with vinegar can be used to remove such stains. Under no circumstances should badly soiled eggs be used for preserving; if put into the jar while dirty they will spoil, and washing removes a protective coating which prevents spoiling.

Water-Glass Method Explained

A good method for the preservation of eggs is the use of sodium silicate, or water glass. If the price of sodium silicate is about 30 cents a quart, eggs may be preserved at a cost of approximately two cents a dozen. It is not desirable to use the water-glass solution a second time.

Use one quart of sodium silicate to nine quarts of water that has been boiled and cooled. Place the mixture in a five-gallon crock or jar. This will be sufficient to preserve fifteen dozen eggs, and will serve as a guide for the quantity needed to preserve larger amounts of eggs

First, select a five-gallon crock and clean it thoroughly, after which it should be scalded and allowed to dry.

Second, heat a quantity of water to the boiling point and allow it to cool.

Third, when cool, measure out nine quarts of water, place it in the crock, and add one quart of sodium silicate, stirring the mixture thoroughly.

Fourth, place the eggs in the solution, being careful to allow at least two inches of the solution to cover the eggs.

Fifth, place the crock containing the preserved eggs in a cool, dry place, well covered to prevent evaporation. Waxed paper tied around the top of the crock will answer this purpose.

Use of Lime Method

When water glass can not be obtained, the following method may be used in its stead. Many consider this method entirely satisfactory, though instances are known where eggs so preserved have tasted slightly of lime.

Dissolve two to three pounds of unslaked lime in five gallons of water that has previously been boiled and allowed to cool, and let the mixture stand until the lime settles and the liquid is clear. Place clean, fresh eggs in a clean earthenware jug or keg and pour the clear lime water into the vessel until the eggs are covered. At least two inches of the solution should cover the top layer of eggs. Sometimes a pound of salt is used with the lime, but experience has shown that in general the lime without the salt is more satisfactory.

A Little Water Glass

Judiciously used while the hens are laying heavily, will do much to reduce the family food bills next fall and winter, when the price of eggs soars again. It is not too early to begin preserving operations now.

How to Dye

DYEING will not cover grease or dust spots.

Choose the dye according to the kind of fabric to be treated—cotton dye for cotton material, wool dye for woolen, etc.

If mixed goods are dyed, cotton dye should be used and the cloth left in the dye long enough for the wool or silk to take on the desired shade. When wool material is stitched with cotton, cotton dye should be used unless it is possible to remove the stitching, in which case, of course, wool dye can be used.

Hems and folds should be ripped open and interlinings removed if possible.

Materials must be immersed in the dye bath and stirred and turned frequently.

Material which has been dyed should be rinsed in cold water until it no longer colors the water.

Hanging up a dyed garment may cause the material to streak. It is better to shake it until nearly dry.

It is better to start with a weak dye and then dip the article several times.

Boiling or allowing a fabric to cool in the dye deepens the color.

Delicate fabrics should be squeezed dry. The wringer may be used on others.

Rabbit in Mincemeat

Mincemeat, that toothsome filler for pies, has been blacklisted the last year or two by economical housekeepers because of the high cost of beef, an important ingredient in this delicacy. umerous "meatless mincemeat" recipes have been concocted, but to the discriminating epicure mincemeat, in order to have the real flavor, needs real meat. Many households are, however, enjoying genuine mincemeat pies and at the same time are enjoying the feeling of having been economical. The enterprising housewives are using rabbit meat in place of beef in their old mincemeat recipes. The pie filling which results is said to be satisfactory in every way, with a genuine mincemeat flavor.

Care of Refrigerator

A good many people who believe thoroughly in the sanitary qualities of paint never think of giving the interior of their refrigerators a coat, although paint dealers sell an enamel especially intended for refrigerators. One of the features of this special enamel is that it will not contaminate the food. This is by no means true of all enamels.

It is difficult to think of anything which it is more important to keep thoroughly clean and sanitary than a refrigerator. Ptomaine poisoning and other serious diseases may result if this matter is neglected.

Of course, the advice to paint applies particularly to refrigerators having galvanized iron linings; those having porcelain or enameled linings require only frequent washing with soap and water to keep them clean and sanitary.

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, Examiner Building, Los Angeles.

2416—Child's Short Clothes

Cut in 5 sizes: 6 months, 1 year, 2, 3 and 4 years. The dress will require 2 yards of 36-inch material; the petticoat 1⅝ yards of 27 or 36-inch material; the drawers 1¼ yards of 27 or 36-inch material, for a 3-year size. Price 10 cents.

2574-2575—Lady's Costume

Waist 2574 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 2575 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. A medium size will require 2½ yards for the skirt, 3 yards for the tunic and 3¾ yards for the waist, of 27-inch material. The skirt measures 2 yards at the foot. Two separate patterns; 10 cents for each pattern.

2358—Misses' Dress

Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 4½ yards of 44-inch material. Width of skirt at lower edge with plaits extended is about 1⅝ yards. Price 10 cents.

2843—Lady's Dress

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Size 38 requires 4⅞ yards of 44-inch material. Width of skirt at lower edge is about 2 yards. Price 10 cents.

2330—Boy's Suit

Cut in 4 sizes: 2, 3, 4 and 5 years. Size 4 requires 1¼ yard of 44-inch material for the waist and 2⅛ yards for the trousers. Price 10 cents.

2836—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. Size 12 requires 3¾ yards of 44-inch material. Price 10 cents.

2359—Lady's House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 6 yards of 36-inch material. The skirt measures about 2⅜ yards at the foot. Price 10 cents.

2841—Lady's Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42, and extra large, 44-46 inches bust measure. Size medium requires 4¼ yards of 36-inch material, with 1¾ yards of banding, 2¼-inch wide, for neck and front. Price 10 cents.

2852—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 years. Size 10 will require 3⅝ yards of 36-inch material. Price 10 cents.

Use Coupon in Ordering Pattern

Herewith find.....cents for which send me the following patterns:

Pattern No.....Size.....

Pattern No.....Size.....

Pattern No.....Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

-easy!

How it helps to take the fuss out of breakfast —Ghirardelli's Ground Chocolate! And how it helps to start the day off just right!

Easy to make—just a minute or two; and then —you have this delicious, sustaining food-beverage, piping hot and ready to serve!

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Since 1852 D. GHIRARDELLI CO San Francisco

Ghirardelli's
Ground Chocolate

Don't fail to mention Orchard and Farm when you answer advertisements. It is to your advantage as well as ours.

Irrigate through this pipe -

Water the high spots
You can't reach with an open ditch

Your ranch doesn't have to be level if you use Western Surface Pipe. You can carry your stream of water across depressions and onto the high ground you can't reach with an open ditch. There's no waste, either, from seepage or gopher holes.

Western Surface Irrigation Pipe is made from a single sheet of heavy galvanized steel. The seam, riveted and soldered, absolutely prevents breaking of the galvanizing. Write for price list and illustrative booklet today.

Write also for prices on Riveted Steel Pipe, Riveted Well Casing and other Irrigation Supplies.

WESTERN PIPE & STEEL CO.
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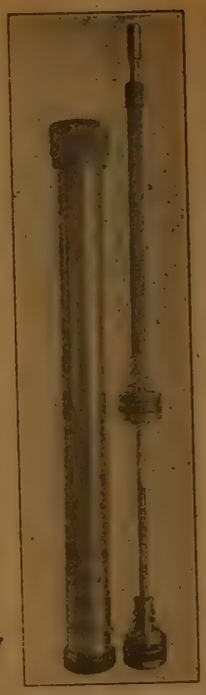
Deliver your water where you want it

Our Double and Single Acting Deep Well Cylinders Are Marvels of Simplicity and Efficiency



They have been perfected after fifteen years of practical experience.

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Ulmer Machinery Co.

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A Non-Poisonous Liquid Spray That Never Fails

Six Gallons for 35c

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If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

MONEY IN RABBITS

Read This Letter From One of Our Customers

Sept. 1, 1918.

H. E. Gibson Co.,
Arcadia, Calif.

Dear Sirs:

Last March I bought from you six Flemish Does and one Buck, for which I paid you $56.00, and I have now sold you back of their young eighteen, making $54.00. Yours very truly,

Mrs. F. R. Doty,
444 West F St., Colton, Calif.

MRS. DOTY still has on hand a large number of young rabbits. We buy back the young stock; all you can raise. Send stamp for particulars.

H. E. GIBSON CO. Arcadia, California

Millions for the Grape Growers

(Continued from Page 7)

ward flow of the sap, which appears to have the effect of retaining and developing the berries on the bloom clusters.

Our experiments show that the incising must be done during the blooming time of the vines. Best results were had when part of the blossoms had opened, or practically in the midst of the blooming period. As the blooming period extends over a limited number of days only, when incising is done on an extensive scale it is advisable to start as the flowers begin to open.

The width of the incision should not be any more than is absolutely necessary, so that the healing-over may be accomplished in no longer than six to eight weeks, or by the time the fruit ripens. On eight to ten-year-old vines, where the incision was no wider than one-quarter inch, the healing was invariably nicely accomplished. The importance of good healing is especially emphasized when, in order to secure full benefits, the trunks of the vines are incised. It is not of the same consequence where the arms or canes only of vines are incised, such parts of vines being annually renewed by new growth. In previous articles I have expressed the belief borne out by recent experiments that our experiments with the Panariti raisin grape have paved the way for establishing in this country a very extensive and important new industry.

Previous to the war, our annual importations of dried currants amounted to over 30,000,000 pounds, or the equivalent of at least 100,000,000 pounds of fresh grapes. Therefore, a market has already been established for that quantity of them and no doubt our consumption of currants can be very materially increased. Furthermore, grapes of this variety are seedless and of exceedingly rich and delicious quality, and ripen at a period when other grapes of even mediocre quality are scarcely to be had. It appears, therefore, that a fine demand for them as a fresh fruit can be established.

Because of their early maturity they may be grown as an advance crop in the raisin sections of this country and the same labor employed in harvesting and curing currant grapes, can cure the other raisins. It is also a great advantage in growing grapes for drying purposes, to be in a district which permits sun drying. The early ripening qualities of Panariti indicate that in all the present vinifera grape districts of this country, there are suitable conditions for the growing of currant grapes.

The Ohanez, another grape variety that was among the early California introductions, was never grown to any extent in this country until this Department found it adapted to some of the conditions in our vinifera regions and had discovered the pruning, training and other treatment it needed in order to give good results. These researches were made with a special introduction of Ohanez cuttings made at the writer's request, received March 10th, 1910.

The extraordinary carrying and keeping qualities of its fruit has led to the establishment of the important Almerian industry of shipping these grapes packed in barrels with cork dust. Large consignments of them reach the important cities of this country every year.

There appears no reason why Ohanez grapes grown in America and packed in American Sequoia sawdust (an excellent substitute for cork dust) should not supplant the imported product.

Good results have so far been secured with it on the following phylloxera resistent stocks: Aramon x Rupestris Ganzin No. 1, Dog Ridge, Riparia x Rupestris No. 3309, Rupestris St. George, Constantia, Solonis x Riparia No. 1616 and Riparia x Rupestris No. 101.

The parallel system of training so extensively used in Almeria has not proven well adapted to it in the hot interior valleys in our vinifera regions. Excellent fruiting results are obtained in training it to an ordinary two-wire trellis with wires 2½ to 4 feet above the ground, with single trunk vines, having either two or four arms and pruned either to canes and long spurs or to long spurs. Very good fruiting results also are obtained with single trunk vines, trained to trellis on which annually canes pruned long (preferably canes with laterals) are selected and the laterals spurred in pruning are left. Good results were also had with vines thus pruned and trained to a Munson trellis.

While the variety is not capable of fertilizing itself in the Department's experimental vineyards, there are so many other varieties blooming at the same time, that no trouble has been experienced in this respect. Where extensive plantings of straight Ohanez are contemplated, the interplanting of a pollenizer is suggested. For this purpose, the Castiza so extensively used in Almeria is recommended. This is a red colored variety, belonging to the same class and is likewise a handsome and valuable shipping grape that has been found to be a good regular cropper.

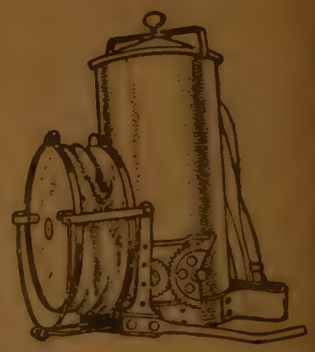
Another point well worth noting is that two distinct strains have been developed from the introduction of the Ohanez, both strains being equally fruitful, of like vine and foliage and bearing fruit alike in every respect, except that on one the berries are clean, whereas on the other, the berries almost invariably have dingy markings on the sunny side, which very much detract from their appearance. Because of this fact only such cuttings as came from vines having the unblemished berries have been sent out by the Department.

We are also trying to assist growers to capture the market for fancy "grapery-grown" grapes that find their way to us from across the Atlantic, where their growing is an extensive business. The present somewhat limited market is due to the exceedingly high prices at which such grapes are sold.

This department has demonstrated that the choicest of these varieties yields abundant crops of the finest fruit in California under ordinary out-door culture. If proper storage facilities be provided for the fruit in our larger cities, and if such grapes are stored where they are sold, they can be taken out of storage when desired and immediately served to the consumers. If only one-eighth the price realized for the imported grapes were obtained for the home-grown product very handsome returns should be realized.

Another project in which we are much interested is to bring about the growing and marketing of table grapes of real merit and fine quality, instead of the varieties almost exclusively used at present, which are large and showy in appearance but of most inferior eating quality. It is reasonable to expect that as soon as our people have once tried the choicer quality grapes and learn to know them, the market for them will be established.

AMERICAN BEAUTY DUST SPRAYER



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One man does 10 to 20 acres per day in orchard and grove.

Don't Waste Time With a Poor Machine

Standard Size.....$18.00
Vineyard Size.....$16.00

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West Coast Engine

3-50-H.P.
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Burn tops, fuel oil or natural gas. Just the engine for your pumping plant.

Simple in Design
Few Parts
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COLLINS & WEBB

412 EAST 3D ST.
LOS ANGELES, CAL.

Is a Truck a Good Investment?

The motor truck is giving the tractor a race for first honors in the motorization of the farm. Tremendous sales to farmers are reported by dealers throughout the Pacific Coast region. Here is an alfalfa grower's report on his experiences with a truck.

WE consider our farm motor truck a very essential part of our business.

Much has been written about the part the plow has played in civilization, but we consider the modern motor truck even a greater benefactor than the plow. There is exceedingly small profit in raising a bumper crop if it can not be marketed successfully.

A motor truck is a magical thing; it shortens miles. Besides shortening miles it increases the value of farm land. The price of land is based on the net income it is capable of producing yearly. The most fertile soil is valueless if it is impossible to market its product at a profit.

We have faith in the motor truck because we have given it some severe tests from time to time and it always makes good.

Cost of Haulage

Our specialty is alfalfa hay and seed. We are located three and a half miles from railroad station. By the team method of hauling it costs us exactly 35c a ton mile to deliver our product on board cars at station, while by using a truck the cost of delivery is cut to a fraction less than 15c per ton mile which gives a net saving of 20c for each mile of haul.

In figuring our hauling costs we have counted such items as interest on investment, insurance, license, driver's wages, gasoline, engine oil, tires and depreciation.

With us the truck is not an experiment. "Old Number One," as we call it, was bought in 1916 and is still running. Of course, it is battered up considerably and makes a lot of noise, but it is still in the game and has paid for itself, with a nice margin besides.

Why Some Failures

Of course, a few persons make a miserable failure when it comes to getting profitable results out of a truck, but in every farming community it is not a difficult thing to find men who make a failure in everything they undertake. It is a fact that some men can not teach a colt to pull; neither can they teach a dog to come to their call. They will hitch a miserable team to a wagon and whip and yell and yet accomplish nothing. The art of driving a team is a fine art and only obtained after considerable practice. Every movement of a horse tells a story to a good horseman. Every sound from an engine has its meaning for an engineer. To get the best results with a truck the driver should study his machine as a teamster studies his horses.

It is untruthful to say that a truck requires no care or attention, or that any person can drive one. We have found the "stitch in time" policy an excellent one to use in connection with all farm machinery—trucks included. Few farmers consider it good business to work a lame horse; the same logic holds good in connection with trucks.

Experience has taught us that nearly all truck troubles can be directly traced to careless driving. It is so easy to say: "The old oil should be drained and the crank case washed with kerosene and refilled with new oil, but I guess I will wait till tomorrow," or "Those wheel bearings should be tightened a bit, but I'm awfully busy just now; I'll do it when I get time."

Some jitney drivers will hump up in the seat and burn every connecting rod bearing out in a thirty mile run, but they will brag because they took every hill on high and made the trip in forty minutes! Such persons have no business with a truck. A truck can be likened to a splendid draft team, built to pull loads and not to make speed. To rush a heavy team of horses is to punish them; to speed a truck beyond its rating means a ruined machine in a very short while.

Advantages of Truck

Why do we prefer trucks to horses?

Because a truck places more power in the hands of one man. With a truck one man can do the work of four men, four wagons and eight horses.

Because a loaded truck travels just four times as fast as a loaded team.

Because we can leave a truck anywhere at any time; it will stand without hitching.

Because a truck can be made new again, but one cannot fix a dead horse with a monkey wrench.

Because no matter how hot the day, no matter how bad the flies may be, the truck delivers a full day's work as usual.

Because a truck is economical; it eats only when it works.—M. L. Adams (alfalfa grower).

Why I Like My Truck

BY A FARMER-OWNER

NO matter how bad the flies may be my truck will not stamp its feet, switch its tail or kick over the tugs.

It will not shy even when it meets a lunatic hurrying to the graveyard astride a motorcycle.

At night I can walk in the barn without fear of being kicked into the next world.

When I need it I know exactly where it is and do not have to look in all the likely, and then the unlikely, places in a hundred acre pasture before I can convince it that breakfast is about to be served.

My truck will not lie down and roll in a cow-lot and then look injured because it has not been curried. It does not blow its nose in my face or use my Sunday shirt in lieu of a handkerchief.

My truck walks twelve miles an hour with a two-ton load and trots eighteen miles an hour when empty.

When I drive on the scales at the stockyards I am not afraid that some sight or noise will cause it to hoist its tail and run away; I climb down and satisfy myself that the weigher is using the scales to weigh my load and not to figure his income tax.

And my truck isn't going to get tangled up in a wire fence the night before I want to start hauling my crop to market.

Also, cup grease is cheaper than gall cure, and it takes me farther.

Uncle Wiseacre Says:

"A feller thet wouldn't think of takin' Footease internally t' cure calluses, 'll' drink a hull pint o' whisky t' relieve his wife's toothache."

"If ye sow weed-seeds, ye'll raise seed-weeds and their seeds 'll make more weeds."

"Remember, th' favorite food o' sharks is suckers."

"One kind of agent is always welcome at my place. That's th' county agent."

"Never offer advice to a college freshman or work to a hobo. Ye'll only insult one an' scare th' other."

PRINCE ALBERT

Copyright 1923 by R. J. Reynolds Tob. Co.

Toppy red bags, tidy red tins, handsome pound and half-pound tin humidors—and—that classy, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

PLAY the smokegame with Prince Albert if you're hunting for tobacco that will cheer your smoke-appetite! For, with Prince Albert, you've got a new idea on the pipe question that frees you from stung tongue and dry throat worries! Made by our exclusive patented process, Prince Albert is free from bite and parch and hands you about the biggest lot of smokefun that ever was!

Prince Albert is a pippin of a pipe tobacco; rolled into a cigarette it beats the band! And, what you're going to find out pretty quick thousands of men discovered as long as ten years ago when P. A. started a smoke revolution!

Get the idea that P. A. is simply everything that any man ever longed for in tobacco! You never will be willing to figure up the pleasure you've missed once you get that Prince Albert quality flavor and quality satisfaction! You'll talk kind words every time you fire up!

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

Louden Barn Equipment

The Louden line includes Stalls and Stanchions, Litter and Feed Carriers, Detachable Water Bowls for Cows, Power Hoists, Cupolas, Ventilators, etc. Write for particulars.

Universal Milking Machines

Reliable, safe, convenient; a saver of time, labor and money. Write for catalog.

Good Territory for Live Dealers

—on any of the above lines. Write for our proposition.

Insure Your HAY Crop This Season

Get it under cover in record time. Cut down your labor cost. Eliminate repairs.

You can do it with Louden Hay Tools. Louden equipment costs less than the loss of a ton of hay. Try it out this season. It will save you time, labor and expense. It will help you save the crop.

Free Book of Barn Plans

112 pages of practical plans, profusely illustrated. Also complete catalog of Louden Hay Tools and Barn Equipment. Write NOW.

California Hydraulic Engineering & Supply Co.

69 Fremont St. SAN FRANCISCO

425 E. Third St. LOS ANGELES

Let Your Children Learn on a Good Piano

A poor piano has no musical quality of tone. This lack of tone quality is a serious menace to the "ear." Also in a poor piano the action is hard and irregular and the fingers and hands are improperly trained. Therefore if you intend to have your children learn to play, provide them with a good Piano. Consider quality and not cheapness—a good reliable dealer has good Pianos at moderate (not cheap) prices.

We invite you to call at any of our stores—or write us asking for illustrated catalog and prices.

We are dealers in Steinway and other Pianos, Pianola and Duo Art Pianos, Aeolian Player Pianos, Player Music, etc.

Sherman, Clay & Co.

Kearny and Sutter Streets, San Francisco.
Fourteenth and Clay Streets, Oakland.
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[illegible] E. Main Street, Stockton.
J and Merced Streets, Fresno.
190-192 S. First Street, San Jose.
Stores also at Portland, Seattle, Tacoma, Spokane.

Federal Farm Loans

LONG TERM LOW RATE

All loans made on an amortization plan whereby the borrower repays the principal gradually with each interest payment.

Over three thousand satisfied borrowers in this district. It will pay you to investigate.

For information apply to the nearest NATIONAL FARM LOAN ASSOCIATION or write direct to

The Federal Land Bank of Berkeley, California

GOLDEN GATE WEED CUTTER

Kills the Weeds and Cultivates the Soil.

Greatest weed killer on the market. Cuts them off clean, under the surface, close down to the roots. Besides, it breaks up the ground so thoroughly that one user says he saved $200 in a dry season, because after cutting the weeds he did not have to plow. Cuts seven feet or less. Weighs but 230 pounds. Cut adjustable to any depth. Constructed of steel throughout. No other implement like it.

WRITE FOR CIRCULAR which illustrates and describes the Sigurd Weed Cutter and contains letters from many users

C. G. SIGURD, Manufacturer
Capital Ave. and McKee Road, San Jose, Cal.

I Wish I Knew More About Bees

(Continued from Page 8)

a good idea to give the land owner a can of honey for the privilege.

"The busy bee and his bustling hostler are welcomed by all classes, because they utilize a waste product, converting minutesimal atoms of nectar into one of the most wholesome and nutritious of foods. Bees change the nectar of flowers, which is composed mainly of sucrose or dextrose, one kind of sugar, into glucose or grape sugar, the latter being the form into which all sweetness must be converted before it can be assimilated by the body. Honey is therefore much more wholesome than granulated sugar or candy, being really a predigested food, since honey mixed with milk can be absorbed directly into the blood.

Orchardists Welcome Them

"Another valuable work performed by bees is the pollination of plants. The value of this service is a disputed point among horticulturists, but the opinion held by the almond and prune growers of California is indicated by the fact that some of them pay $1 a hive to have bees in their orchards during the blossoming season. One grower pays an additional $50 for a man to care for the bees.

"While bees are accused of spreading blight, I never once knew of anyone objecting to them on that account, probably because of the fact that other insects also carry the germs of this disease. In answer to the age-old complaint that bees suck the juice out of grapes, it should be explained that bees never touch grapes until the skin is first broken by some other agency. Many birds are guilty of this latter offense, the chief culprit being the Cape May warbler, which will puncture grapes almost as fast as they can be counted.

"Choosing the proper climate for an apiary is a very important step on the ladder to saccharine success, because conditions and consequent results vary greatly. Bees thrive best in a mild, equable climate, where there is an abundance of sunshine and plenty of honey-producing plants blossoming at all seasons of the year. Southern California answers all these requirements and therefore might properly be termed a beekeeper's paradise. California produces one-sixth of the entire honey output of the United States. Many local producers insist that the Pacific coast is overcrowded with bees, but others are of the opinion that with the increasing acreage of alfalfa and organization on the part of the apiarists, a constantly increasing market may be established, with room for regular expansion. A locality where there is excessive rainfall, especially during the spring and summer months, is not adapted to honey production, because the rain washes the nectar out of the blossoms before the bees can gather it.

"New irrigation districts offer the best locations for apiaries, because the climate in such places is apt to be dry and sunny and new fields and fresh bee pasture can be appropriated by those who are first to bring in sufficient bees to harvest the nectar crop. Montana, Wyoming, Idaho, Arizona, Nevada and Nebraska are among the States in which experts assert there are big opportunities for beemen. Long, cold winters may seem an unsurmountable barrier to success with bees, but this obstacle can be overcome by providing suitable winter quarters, such as a cellar. In the Shasta Valley I have found winter protection unnecessary, although high winds and zero temperatures sometimes prevail.

Bees and Livestock

"Bees may often be profitably kept in a stock country. Stockmen like to wait until alfalfa has blossomed to cut it, being more concerned with the richness of roughage than with mere bulk. When alfalfa is allowed to go to seed for threshing, bees obtain the maximum amount of honey. In some sections, such as the Surprise Valley in Northeastern California, only one crop of alfalfa is cut each year, the plants being allowed to grow and bloom all summer long.

"Fear of getting stung is the biggest bugbear of the bee business. By exercising a little care and common sense the trouble from this source can be minimized. Always wear a veil and gloves when working with bees. Before opening a hive take a smoker and blow a few puffs of smoke into the entrance of the hive and also under the super, lifting the latter slightly to permit of this operation. After a minute or so the bees will be found quite harmless. When bees are filled with honey they can't sting, because they are unable to bend their bodies. Leave them alone for a few days after a flow of honey has ceased, for at such times they are apt to be cross and irritable. Don't stand in front of a hive of working bees nor drop any honey or comb where they can get it, for when feasting on stolen sweets they are likely to be the most unmanageable.

"Carry a piece of shingle for the occasional belligerent bee that persists in following you around. Killing a bee is a little more difficult than swatting a fly. The best way is to wave your weapon back and forth in front of your face until the bee comes near enough to be easily knocked out. When a bee stings you, crush him with a rolling, sliding motion of the hand. If the stinger remains lift it out with a penknife or the finger nail.

How to Avoid Trouble

"After being stung a few times at the beginning of the season you will be more or less immune, so that subsequent stings will cause little pain. Bees dislike equine odors and dark or bright colors. It is, therefore, best to wear light-colored clothing, which should be changed after work-

(Continued on Next Page)

The Decision in the Prize Contest

NOW rests with the judges, who have the entries under consideration. Although the results were not received in time for publication in this issue, owing to the fact that the different judges were at Riverside, Davis and Berkeley, the checks will undoubtedly be in the mails within the next few days and the names of the fortunate winners published in the issue following. The first prize will be $50; second, $25; third, $15; fourth, $10; fifth, $5.

ing with horses. The reason that bees don't sting some people is because the latter have learned how to handle their insect friends, rather than because they possess natural immunity. Avoid sudden, quick motions, injuring of inoffensive bees, or anything else which tends to anger or excite them. Be quiet, careful, gentle and considerate, treating your tiny workers as friends, and you need have no fear of injury.

"What is the commonest cause of failure with bees? Stinginess and greediness. The selfish desire to get every possible pound of honey often causes keepers to leave their faithful workers with insufficient stores to carry them through the winter. As a result, many die of starvation, leaving only a few weak colonies to begin work the next season. Such a course is cruel and inhuman, as well as bad business. Be very sure your bees have enough to eat during the longest, hardest winter. Don't overreach yourself and risk being caught with insufficient feed. Have a reserve supply of some other kind of sweetness, in case the honey is all used up before more can be gathered. I always keep a couple of tons of honey, worth nearly a thousand dollars at present prices, for winter feeding, and find it pays big dividends in the shape of a full quota of large, strong colonies with which to begin the next year's business.

"Another fruitful source of failure is the manner in which the honey is marketed. The idea of selling the entire crop at wholesale appeals to many, because it brings in the cash all in a lump sum and saves much planning, packing, dickering and collecting. However, if you let the other fellow do these things he will reap the reward and you will be left holding a half-filled sack. It is possible for the producer to save practically all the wholesaler's profits and a good share of the retailer's. Of course it takes time and trouble, but so does any kind of money-making.

"The beginner should build up a trade with merchants and consumers, cultivating and caring for this trade just as carefully as he cares for his bees. Keep a supply of honey for sale the year around, so far as possible, putting it up in the kind of packages the trade demands. Ask fair prices and be satisfied with reasonable profits.

"Make sure your goods are always as represented and of the highest possible quality. This will gain for you a reputation which will in time become a very valuable asset, whether you wish to sell out or continue in business.

"Extracted honey is the easiest to produce and should constitute the bulk of the beginner's output. If the frames are left in the hives until completely filled and the comb capped over, as must be the case in producing comb honey, the bees are apt to swarm, a contingency carefully to be avoided. How to handle this situation, as well as numerous other details of the business, can be learned by experience, guided by reference books and the example and instruction of successful beemen.

"Apiculture is peculiarly adapted to women, except possibly the lifting of honey-laden supers, which can be done by an occasional male helper. Skirts are apt to suggest stings to the feminine mind. In these days of farmerettes and feminalls, however, few women consider the question of attire a serious one.

"For those who are adapted to the work, what is pleasanter or more profitable than apiculture? The busy season with bees lasts but half the year, the part in which it is most agreeable to be outdoors. The work is light, clean and interesting, requiring only a small initial outlay for a few swarms of bees, which can be increased as fast as the keeper's experience warrants. As a business or a side line it offers pleasant prospects and potential profits."

The Pacific Silo—Your Ideal

If all the farmers could get together, exchange ideas and agree upon an **ideal** silo, then start in and build it as they wanted, the result would be the **Pacific.**

The **Pacific** Silo is just the one you have always wanted. Talk to the farmer who owns one; or, better still, talk to the man who owns two—a **Pacific** and some other. Hear what he says about it. His word is our best advertisement.

The Pacific is built of Redwood—that long-lived wood of everlasting qualities. Coming as it does, from forest giants, this wood makes a perfect silo lumber. We use nothing but selected 2-inch Redwood staves.

Heavy round steel hoops, doubled at the bottom where pressure is greatest, tightly bind and lock the staves into place. Interchangeable doors, hingeless and secured by four corner clamps. Self-supporting, watertight cover fitted with hinged ventilator and manhole.

The Pacific is a long-lived Silo—a permanent landmark. Build it now. Your children will use it after you're gone.

No other one word in the English language describes **"Service"** such as **"Pacific."**

Mail the coupon today for descriptive matter and prices on Pacific Silos and Tanks. Tell us your needs and we will gladly supply any special information desired.

Water All the Time

Water is the second greatest worry of the man who owns stock. Stock need water all the time—day and night, spring, summer, winter and fall.

A PACIFIC REDWOOD TANK will provide them with plenty of water when they need it—just like a spring.

Made of heavy Redwood. Bound with large steel hoops. Fitted with patent non-shrinking feature that keeps the tank always tight. Will not leak, shrink or burst. Will last a lifetime and give service every day.

Write for information about our non-shrinking feature. Find out why the **Pacific** is always tight and never leaks.

Cut Out and Use This Coupon.

Pacific Tank and Pipe Co.

314 Market Street,

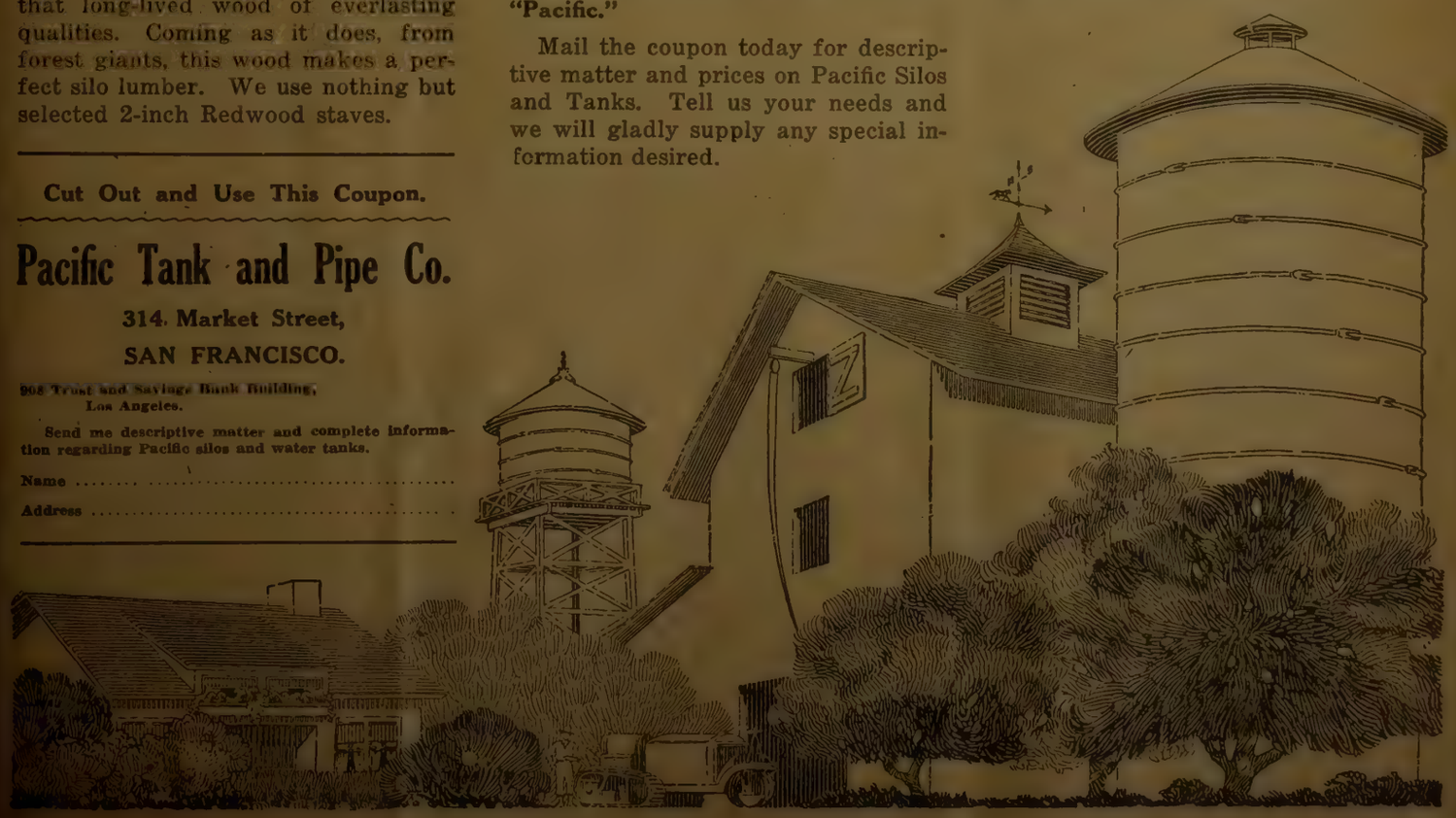
SAN FRANCISCO.

908 Trust and Savings Bank Building, Los Angeles.

Send me descriptive matter and complete information regarding Pacific silos and water tanks.

Name .....

Address .....



A Spring Tonic

ONE of the greatest business tonics is a little phrase which never grows old: "Enclosed find check." It makes the world seem brighter and the blood run faster. But to those of us who are not entirely mercenary there is even sweeter music in a few words of friendship, encouragement or gratitude along with the remittance.

Very frequently of late Orchard and Farm has received letters which were particularly pleasing because the writers mixed a little sentiment with business. Here is a sample: "Enclosed find check for three years' subscription to your valuable paper, which I consider the best of its kind in the Southwest. I used to live at Ontario and this is a renewal." For this little tribute we are very grateful to the writer, S. C. Baldwin, of Upland. We are glad that when he moved he wanted Orchard and Farm to continue its monthly visits to his home. Hundreds of renewals received during the past few weeks show that the old friends of Orchard and Farm do not want to be left out of the big, thriving, interested, growing family of readers, even for one month.

Bindloss, Alberta, Canada, is the postmark on a letter signed Bert Leeper. Mr. Leeper says: "I have received your valuable paper for over a year and am well pleased with it. Although we do not farm the same here as in California, I find may useful hints."

From Chino, Cal. (whose boosters assert that it is the place where everything grows), S. F. Davis writes: "Your magazine is very fine, large, entertaining, instructive." When we observe how the number of subscriptions from Mr. Davis' section has grown we are inclined to agree with the boosters.

A Spokane (Wash.) subscriber, F. W. Skinner, considers Orchard and Farm "the best magazine on the Pacific Coast," while Thos. D. Sanford, of Galt, Cal., enthusiastically compares Orchard and Farm with other farm papers for which he subscribes and congratulates us on having distinctive features not found in any other agricultural publication. And incidentally the encouraging words, "Enclosed find check," are not lacking, showing that he is willing to back his favorite.

Nor is that pleasing little detail overlooked by T. P. Jarvett, of Santa Cruz, who describes Orchard and Farm as being "chock full of information."

AND CRITICISM?

"The only trouble with your paper," we recently read in a letter from W. C. Bradford of San Diego (and we thought that we were in for some sharp criticism), "is that there is too much time between issues."

"I cannot get along without your paper; it is useful to me in my agricultural work and gives me valuable information," says W. M. Emory, of Fillmore, Cal.

Some big features are in store! Don't let your subscription expire. Don't miss a single issue!

—The Editor.

Citrus Questions

Continued from Page 6)

in relatively small amounts and at such intervals that very little of it was stored in the soil. The result is a dry subsoil in most sections. In lemon orchards not regularly irrigated during the winter there is now noticeable considerable dropping of the young fruit, which is apparently to be attributed to lack of moisture in the subsoil.

Importance of Soil Moisture

Scientific Irrigating Coming

The soil moisture question is one of the most important with which the citrus grower must deal. Under a deficiency of moisture in the soil citrus trees fail to set and mature satisfactory crops; if too much water is applied they suffer from lack of aeration and do not thrive. Scientific irrigation is bound to come. Irrigation by the calendar is a practice that must go. Many citrus growers have failed to realize that the most important factors in determining the needs of citrus trees for water are climatic conditions and, of course, these latter are nearly always "most unusual." The result is that quite often the soil water actually reaches the wilting point a week or so before the next irrigation. Such phrases as the "wilting point," "water holding capacity," and "optimum moisture content" are bound to enter more and more into the vocabulary of progressive citrus growers as time goes on. The actual determination of these constants is profitable at the present time only on larger acreages, but the development of some sort of co-operative effort is certain to be brought about in the effort to solve this problem for the smaller grower. It may be through the local packing house or possibly it will be a Farm Bureau development, but it will come. The elimination of guess work should be the goal of every person interested in the citrus industry.

Sunflowers

Behind the Times

"I guess very few cartoonists have ever raised a family."

"And why?"

"Because they always draw pictures of the baby with a 12-inch hose attached to his nursing bottle."

JUST BEFORE THE GREAT DROUTH

"Quick, waiter, bring a piece of sponge cake."

"A good and wonderful man is dead,
They cried—and then the will was read,
"A cheat, a liar, a mean old fool!"
(He'd left his coin to a struggling school.)

The Green Hand

His Employer: "Did you oil your harness last night as I told you to?"

His Nibs: "Yes, sir, but it still squeaks."

ORCHARD and FARM

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CONCISE CONTRIBUTIONS

On practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling why, when, where, who and how much.

RATES

30 cents per line..... 1 time
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26 cents per line..... 6 times
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(Figure 7 words per line)

Advertisements much reach us before the 21st of each month. Changes of copy of advertisements running till forbid must be in our hands by the 10th of each month preceding date of issue. Address ORCHARD AND FARM, Examiner Building, Los Angeles, Cal.

FARM TRACTORS, MACHINERY

ON ABOUT JULY 1 we will place on the market a small tractor of 13 h. p. Tractor will be made with 36-inch wheels and will be low enough to go under trees; it will also be arranged for disc, cultivator and with mowing attachment and can be operated by one man and will be suitable for all kinds of gardening and cultivating and will handle two 8-inch plows. The total width of tractor will be 32 inches, length 60 inches, total height 42 inches. Price of this tractor will be $475.00 at factory. Write for further data. U. S. Iron Works, Seattle, Wash.

AGRICULTURAL IMPLEMENTS

IMPLEMENTS AND RANCH SUPPLIES. SAMPLES and slightly used. Four floors. Large stock. Liberal credit. Save 50 per cent on some. No branches. ARNOTT & COMPANY, INC., The Yellow Front. Established 1892. 112-118 South Los Angeles St. Los Angeles, Cal.

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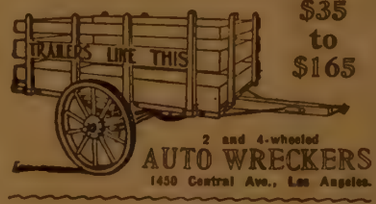

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AUTO WRECKERS
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SEVERAL NEW AND SLIGHTLY USED ENGINES. ARNOTT & CO., Implements, 112 South Los Angeles st., Los Angeles.

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CABBAGE AND KALE PLANTS — Any quantity delivered anywhere, 100, 40c; 300 for $1.00. By express, collect, $2.00 per 1000. Tomato, cauliflower and pepper, 25c per dozen. I. F. Tillinghast, Santa Rosa, Calif.

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ADVERTISER is DESIROUS of corresponding with rancher who is looking for a strictly reliable man, wife and son 16. Life abstainer, non-smoker. At present foreman on farm of 1000 acres. Pioneer place, easy reach of Pasadena or Los Angeles. Address Hiram Cox, General Delivery, Kenosha, Wis.

MISCELLANEOUS—For Sale

FOR SALE—5000 feet No. 14, 10-inch riveted steel pipe, 2500 feet 11-inch, 2500 feet 12-inch, 1500 feet 4-inch. L. B. Vollmer, Monrovia, Calif.

REAL ESTATE FOR EXCHANGE

WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

REAL ESTATE

MEXICO

Far-seeing investors are looking to Mexico. They predict a great boom there. The writer has just returned with some farmers who bought and are returning to cultivate their land. We have a number of American farmers who are located there at present. They are only too glad to explain the richness of this great valley, with the many possibilities for the small investor that cannot be obtained elsewhere; only ninety miles from the border, on the main line of the Southern Pacific Railroad. Cheap land, cheap labor and low taxes. Good land in Mexico is bound to rise in price soon. Now is the time to buy. Call and let us explain our plan of colonization to American farmers.
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507 E. N. Van Nuys Building,
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FOR SALE—BARGAIN.
No. 27—Orchard, 216 acres in Yolo County, 100 acres in trees, including apricots, peaches, prums, etc. Earliest orchard in district. Now in full operation. Houses, sheds, barns, driers, trays, etc., and all equipment, four miles from town. Terms cheap. Apricots, 22c this year.
We have for sale other fine orchards, dairies, cattle and sheep ranches. Call on us for further information. W. J. MORTIMER & CO., Shattuck and Center, Berkeley, California. Phone Berk. 3090.

FOR SALE — Mountain ranch, 40 acres deeded; large canyon, range free, covered with oak and pine; wonderful opportunity for hogs; 20 acres under irrigation; hog-tight fence; family orchard consisting of cherries, apples, pears, English walnuts; 5-room house, furnished. Price $3500.
DR. G. W. HARVEY,
Care La Grande Hotel,
Chico, Cal.

MOUNTAIN RANCH—334 acres, 90 acres under cultivation, 30 acres bearing orchard, balance large pine and oak; FREE WATER for irrigation. Deep, rich soil, eight-room house, 100-ton hay barn, outbuildings. Will subdivide. Price $7500. Terms. Address Paradise Ranchito, P. O. Box 123, Paradise, Butte County, California.

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FOR SALE—Near prosperous town, prune orchard, chicken ranch, home with many advantages, all in one. Large, sunny house, shady yard, etc. For particulars address Alice Wingate, owner, R. 2, Box 40, Santa Rosa, Calif.

BARGAINS — BARGAINS — Send for free magazine of farms, businesses, wild land, exchanges, any kind, anywhere. Western Sales Agency, Minneapolis, Minn.

FLORIDA FARMS FOR SALE

174-ACRE FLORIDA FARM, $3000.
BORDERS BEAUTIFUL RIVER.
6 only 2 miles depot town. Land suitably divided into chocolate loam beds, clay subsoil, pasture and wood; 250 bearing orange trees, 700 seedling oranges, also grapefruit, tangerines, grapes, etc. Fine view from shaded 80-foot veranda of the 5-room house, large barn, fruit packing house, smoke, poultry, potato houses. Aged owner, for quick sale, includes gasoline launch, wagons, long list farming tools, all for $3000; easy terms. Details page 69 Catalog Farms 13 States, copy free. STROUT FARM AGENCY, 1210 A. Heard Bldg., Jacksonville.

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FOR SALE—LUCK UNNECESSARY TO GET RICH if you have cheap California acreage. I can sell you 40, 80, 160 acres, near railroad town, boulevards, electricity, water soon; price $10 to $25 per acre, now listen: land within one mile is producing $300 per acre. Concordia Valley. O. S. WILSON, 729 Story Bldg., Bdwy. 1.

FOR SALE—In Humboldt County, 90 acres; 25 acres suitable for grain, balance timber and grass. Write for details. Address Box 830, Orchard and Farm.

GOVERNMENT LANDS

THERE is a big tract of smooth, fertile valley land in California, now open for entry under the homestead or desert land laws. This land is now being put under irrigation by Farmers' Mutual Ditch Co.; 5 miles of the ditch is now constructed. This is a valley of opportunity, close to pine forest, adjacent to lakes, contiguous to mountains, rich soil, cheap water, easy terms. Don't pay location fees. For particulars address INTERSTATE DEVELOPMENT CO., 826 L. A. Investment Bldg., L. A., Cal.

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FOR SALE—600 acres of good, level land, unimproved, in Klamath County, Oregon; good for alfalfa, grain or stock; price, $10 per acre; easy terms. Mrs. Mary Johnson, 414 Wilson ave., Vallejo, Calif.

40 ACRES—Good improvements, good soil, water and grass. Fine for berries, vegetables, hogs and cows. Price $3000. No trade. H. Koenig, Fort Bragg, Calif.

FARMS WANTED

WANTED—To hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

WANTED—To hear from owner of good farm for sale; state cash price, full particulars. D. F. Bush, Minneapolis, Minn.

FARMERS CLASSIFIED MARKET PLACE

POULTRY

White and Brown Leghorn Chicks, guaranteed strong and vigorous, and bred for large egg production. Thoroughbred stock. Price $14.00 per 100; reduction by the 1000. Eggs, $1.75 per setting. Stock for sale.

I use and sell Pioneer Incubators and Brooders. There are no better machines made. Prices reasonable. Write for particulars.

JAMES D. YATES, Poultry Judge, Modesto, Cal.

QUALITY Bred Chicks—Thoroughbred S. C. White Leghorns, bred to lay; not simply chicks, but stock that lays and pays. I hatch from my own yards exclusively—$500 to anyone that can prove otherwise. My ideal stone hatchery enables me to hatch perfect chicks during extreme temperatures; and all my chicks are shipped in the Dobbel Safety Boxes, which insure proper ventilation and safe delivery. Quality and satisfaction guaranteed. Send for my folder. F. W. Dobbel, Buena Vista Poultry Yards, Box 173-O, Sonoma, Calif.

BARRED PLYMOUTH ROCKS—Champion prize winners and wonderful heavy layers. We are selling hatching eggs from twelve grand matings. Send us your order early and get in line with the most profitable era ever known in the poultry business. I have made a specialty of Barred Rocks for over twenty years. That's why our birds win at all the leading shows. "Nothing Better in Poultry" than Vodden's Barred Rocks. Vodden's Rockery, Los Gatos, Cal. Catalog free.

BABY CHICKS FOR SALE—250,000 S. C. White Leghorn baby chicks from heaviest laying (Hoganized) stock. 25, $3.50; 50, $7.00; 100, $12.50. Special prices 500 and 1000 lots. Safe delivery guaranteed. You pay only for chicks received alive and in good condition. No money in advance; pay on delivery. Shipped safely anywhere west of Rockies. Finest hatchery in the world. Established 1898. Must Hatch Incubator Co., 432 Seventh Street, Petaluma, Calif.

THE MISSION HATCHERY can now supply for June and July delivery, WHITE, BROWN, BUFF LEGHORNS; baby chicks of quality breeding, hatched right and priced right, and shipped to arrive safely; express or parcel post; large or small lots. Also booking orders for Barred and White Rocks, Black and White Minorcas, R. I. Reds. Circular and prices for the asking. The Mission Hatchery, Box 27, Campbell, Calif.

"EGGS, White Leghorns from 230 to 280-egg hens, mated to cockerels of the 250-280-egg type. Bred for 16 years for vigor, heavy laying and standard requirements. Trapnested and Hoganized. McFarlane and Barron strain. Eggs, $1.50 a setting; $7 per 100. Chicks, $15 per 100. A. Worel, R. F. D. 3, Napa, Calif."

BABY CHICKS from my thoroughbred, heavy laying flock of S. C. White Leghorns; 14 years of most careful and successful breeding. Am booking orders now for May and June delivery at reduced prices. Write for particulars. J. R. Heinrich Poultry Yards, Arroyo Grande, Cal.

THOROUGH BARRED P. ROCKS. Egg record 1917 average 190 eggs per hen; 1918, 210 eggs. Hatching eggs $2.50 per 15, chicks March and the following months 30c each. Warren Poultry Yds. Phone 5599. 36 Little Delmas Ave., San Jose, Cal.

N. Z. REDS, pedigreed, registered from prize-winning stock. Fine does bred to reg. buck, $5. Reg. does bred, $8. Bucks fine dark red fellows, 5 mos., $6. Satisfaction guaranteed. E. Peppin, 86 Cambridge, San Leandro, Calif.

"EASTMAN'S BRED-TO-LAY" Hoganized and trapnested Barred Plymouth Rocks. HATCHING eggs. Now booking for FALL chicks. Fairmead Poultry Farm, Fairmead, Cal.

WHITE LEGHORN BABY CHICKS every week, good, strong youngsters from fine layers. Also other varieties. Write for circular. Stubbe Poultry Ranch, Palo Alto, Calif.

BABY CHIX—R. I. Reds my specialty. The best pays. Bred for eggs, color, size. Hens on free range. Denton Poultry Yards, Box 300, Campbell, Calif.

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S. C. WHITE LEGHORNS. Standard bred and fine producers. Eggs and chicks. Prices right. Arthur R. Schroeder, Mayfield, Cal.

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Our Baby Chicks Lead

WHY?

Because they are properly hatched and handled and we can supply chicks

EVERY DAY

—We guarantee a full count of live chicks at destination on lots of 25 or more.
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The greatest EGG-MACHINES and the HARDIEST of all. Also prize-winners at New York, Boston, Chicago, San Francisco, etc. Eggs from the finest matings in all America, $3 and $5 per 15; $15 per 100.

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YOU ARE NOT TOO LATE—Our early maturing, winter laying strains, June hatch develop quickest into profitable winter layers. "My thirty pullets laid at four, sixth month (January) cleared $31." Why? Bred twenty years to lay winters, 200-290 eggs yearly. White, Brown, Buff Leghorns, Reds, Anconas, Rocks, Minorcas; clearing customers $5. Valuable circular with proof free. 70,000 egg hatcheries supplying chicks. Thousands shipped promptly, below ordinary chicks. Breeders (pullets) sale beginning. W. Beeson, Pasadena, Cal.

FALL CHICKS—Pure-bred S. C. White Leghorns. We hatch only from selected two-year-old hens of PROVEN MERIT and produce chicks that thrive and make real profit paying hens. Send for our folder and price list and order now for August and September delivery; avoid disappointment later on. G. & C. POULTRY FARM, Sonoma, Calif.

EGGS for hatching from prize-winning, heavy-laying Golden Buff Leghorns. W. L. Bartholomew, Chino, Calif.

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DON'T LET COCKERELS GET TOO OLD before caponizing; 8 to 10 weeks is good if heavy breeds; no feed nor water before operation. Instruments, Book and Bow, $5.50. Furnish your table with this best of meat. Send stamp for reply. Mrs. H. Ament, 423 Kerckhoff Bldg., Los Angeles, Calif.

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MAMMOTH BRONZE TURKEY EGGS, also Collie dogs for herding and watch dogs. Address John G. Mee, St. Helena, Calif.

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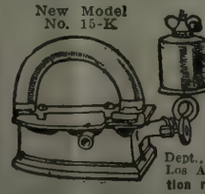
MISCELLANEOUS—FOR SALE

New Model No. 15-K



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If so, keep cool. Use the Imperial self-heating Iron. Makes its own gas, generated from kerosene. The cheapest and best iron made. Cole Lite & Sales Co., Lamp Dept., 1216 to 1220 E. 41st st., Los Angeles, Cal. Demonstration room, 246 S. Spring St.

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1000 BUSINESS CARDS for $1; letterheads, envelopes, bills, wedding work, show cards, rubber stamps. ROBERT HILL, 2188 Sutter st., San Francisco.

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CALDWELL'S Reliable Rabbit Remedies. Ear remedy, 35c; slobber remedy, 35c; eye remedy, 35c; vent remedy, 35c; diarrhoea remedy, 50c; tonic, 65c; buck tonic, 75c; snuffle remedy, 75c, postpaid. Cure or money back. Send for free circular on rabbit diseases. Agents wanted. Caldwell Rabbit Farm, Lock Box 274-F, Los Angeles, Calif.

ARMSTRONG'S New Zealand Red Rabbits; improve your stock with a good, healthy buck, pedigreed and registered. Prices right. ARMSTRONG'S RABBIT YARDS, Petaluma, Cal.

HIMALAYAN FUR RABBITS, $133 yearly profit from one pair. "Meat and Fur Folder." Mrs. L. B. Hackett, Oakland, Calif.

RAISE RABBITS for us. We supply the breeding stock. Send stamp for particulars. H. E. Gibson Co., Arcadia, Cal.

FLEMISH GIANTS, pedigreed. None better; also utility stock. Hotel De Bunny, 1578 W. 46th St., Los Angeles, Cal.

FOR SALE—Flemish Giant and New Zealand Reds. Pedigree and utility stock. Shurragar, San Luis Obispo, Calif.

FOR SALE—Rabbits; New Zealand and Flemish Giant. Paul Kruger, Watsonville, California.

NEW ZEALAND REDS — Pedigreed and utility fine stock. Write for prices. C. L. Reynolds, Scotia, Calif.

RABBITS — New Zealand Red breeding stock. R. C. Specht, Route A, Sonoma, Calif.

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GUINEA PIGS FOR SALE — Solid color Moles, Reds, Creams, Blacks, Whites and Golden Agontis. Also broken colors—both sexes. J. E. Love, 1845 N. El Molino, Pasadena, Calif.

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FLORIDA SOUR AND CALIFORNIA Sweet Seedling Orange Seed-Bed Stock. The time to plant is propitious; order now. SOUTHLAND NURSERIES, 1941 E. Colorado St., Pasadena, California.

HARDY Hybrid Alfalfa. Wonderful Grower. Getting thicker and better with age. Permanent. Quality unexcelled. Write for proof. J. L. Lawson, San Jose, Calif.

Write for our PLANTING GUIDE. WESTERN SEED CO., 116 E. 7th Street, Los Angeles, California.

I PUT Elephant Grass on Wagner Ranch, Descanso, Cal. If interested in grass write me for competent advice and plants. J. W. H. Taylor, Julian, Cal.

STOCK PUMPKIN SEED. Good germination; any amounts, 20c per lb. Aurora Seed Mill, Stockton, Cal.

GUARANTEED SEEDS

FIVE RARE NEW GARDEN NOVELTIES —Extra prolific, intensely practical. (See detailed description in my classified advertisements in February and March issues, this journal), Giant Marrow Cabbage, eighty tons per acre, Kale's eclipser generally. Plant year round for Calif. succession "Greens." "Golden Potlatch" push pea; rarest grown; three crops from same roots in 1917-18. RAREST BUSH AND POLE BEANS for Coast. "Purple Perfection" and Japanese "Purple Special" Potatoes—the latter purple throughout. Fancy salad makers. Small start of all five for 50c prepaid. Photos, suggestions FREE. E. E. Martin, Guaranteeing Seedsman, B-4, Charleston, Wash.

NURSERY TREES AND PLANTS

TREES, TREES—Placentia and Eureka walnuts on black. A general line of high grade nursery stock. A. R. Marshal's Nurseries, 1212 Ross st., Santa Ana, Cal.

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This established Detective Agency investigates all cases of civil, criminal, social and domestic nature. Should you ever desire certain information, to engage us insures you "a square deal," honest reports and absolute faithfulness. Detectives of a superior class will be detailed on your case, and at a reasonable fee. All dealings strictly confidential; secrecy and satisfaction guaranteed. Our reputation is the best. Consultation free. Correspondence solicited and respected. Representatives in all principal cities. THE CHARLES R. BURGE DETECTIVE AGENCY, 420 American Bank Bldg, phone 11498, Los Angeles, Calif.

SECOND-HAND MACHINERY

EVERYTHING SECOND HAND—All kinds stoves, plumbing supplies, pipe, farm tools a specialty. Noah's Ark, 609 E. 1st St. Phone 19750.

LIVESTOCK—Chester Whites

BILLIKEN CHESTER WHITES—The real utility type; the money-getters. Three herd boars in use, nand none better anywhere in the West. BILLIKEN, the 1917 California Grand Champion, conceded to be the best Chester boar that ever came to California. Wildwood Boy, who has Wildwood Prince for a grandsire, and who is the largest and heaviest Chester boar in the State. Bonnie Model, who has Combination II for a grandsire, and who is out of the 1916 California Grand Champion sow. The sows are the big, smooth, stretchy kind that produce those fast-growing easy feeders. Will have a limited number of May, June and July pigs to offer at weaning time. Both sexes. Early spring litters are sold excepting a few boar pigs that are now weaned. When you start in the hog business start with the right kind of foundation stock. If you want to improve what you have, get one of the boars of this strain. C. B. Cunningham, Mills, Calif.

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THE WOODTITE LABORATORIES
MODESTO, CALIFORNIA

July, 1919

The Biggest Boost the Silo Ever Had

10c Per Copy

ORCHARD and FARM

ESTABLISHED 1888

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By Country Life Publishing Company

Ettersburg Strawberry Bush

(See Article in This Issue)

Offices
Los Angeles and San Francisco

More Light on the Poultry Situation

Stop those Squeaks

A Few Drops of Spoktite Will Do It

Most squeaks are caused by loose wheels. These squeaks can be stopped by squirting a small quantity of SPOKTITE into the crevices that appear where the spokes enter the hub.

What is more annoying than a constant squeak, squeak, squeak. Not only is this an annoyance, but it is a constant source of danger for if the wheels are loose they threaten the safety of those in the automobile.

Spoktite stops squeaks and tightens loose wheels.

Loose Wheels are a constant Source of Danger

Keep the Spokes Tight!

SPOKTITE

Swells Wood — **Is Not A Glue**

Many Accidents are due to Wheels Getting Loose

Keep the Spokes Tight!

When wheels squeak it is a warning that they are getting loose and if you allow them to remain loose you will be in constant danger of meeting with an accident. Wheels are the very foundation of car-safety and should be watched closely.

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Do you wash your own car?

Get a bottle of this new autowash and see how much easier it is to wash your car in this manner. It cuts grease, it removes stains and dust and dirt disappears like magic. Cannot injure the paint or varnish and leaves a shiny surface.

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Modesto, California

ORCHARD and FARM

VOL. XXXI. JULY, 1919 NO. 7

PUBLISHED MONTHLY BY COUNTRY LIFE PUBLISHING COMPANY, EXAMINER BUILDING, LOS ANGELES, CALIFORNIA

"Snapshots" of an Epochal Convention

IT IS impossible, in our limited space, even to epitomize the many progressive measures, old and new, that were discussed or launched at the great Riverside Horticultural Convention. Gathered together to consider their mutual problems, fruit-growers, farmers, horticultural inspectors, nurserymen and State and Government officials reached a new understanding. And surely no person privileged to attend this most important series of meetings could fail to sense the feeling of optimism, assurance and goodwill that prevailed. To those who attempted to feel the pulse of the gathering, there was apparent an indefinable something which might be described as "the spirit of the reconstructive era." It is the same spirit that has made many returned fighting men too big for their old jobs and has created closer union between all classes of our peoples. Than this convention, no greater assurance has been given to California in years that nothing shall be allowed to interfere with the protection and development of her priceless horticultural resources.

THOMAS F. HUNT, Dean of the College of Agriculture, University of California: "There never was a time when better opportunities presented for the man who is willing to work with his hands. Those who went in debt previous to the war in order to carry on farming operations made money. Whether or not it is so advisable to go into debt now is another question. Some economists predict a rapid decline in prices, such as occurred after the Civil War. We must remember, however, that the nation was then upon an entirely different basis, heavily in debt to foreign powers and facing the necessity of building up a market for excess agricultural products. At the present time the nation is upon a gold basis and there exists an almost insatiable export demand for many of our products of the soil. The relationship existing between commodity prices depends upon the instruments of credit in circulation. High prices for farm products do not necessarily indicate that the farmers are getting rich, but they do, as a rule, protect him against loss. And confidence is the basis for stimulated production. Production of food is not increasing proportionately with the growth of our population. What is the answer?"

GEORGE C. ROEDING, president, California Association of Nurserymen: "What is needed in the horticultural industry of California is more broad-mindedness on the part of all men connected with it. If nurserymen and horticultural officials will in all cases deal with each other in respect and confidence, there will be less friction, and the prestige and wealth of the State will be increased accordingly. But this ideal condition can never be brought about as long as any person involved fails to take a broad view of the situation. Not only must each individual case be so considered, but action must be taken which will bring about the greatest good to the majority. There are many critics of the recently enacted Federal Quarantine Act, which practically prohibits importation of all ornamentals. But I believe it to be one of the best things that ever happened to this country and will say that it should have been put into effect 30 years ago. Moreover, I think most of the California nurserymen agree with me. It is a fine thing that we can meet together in this way and exchange news and views."

"WHERE will the citrus growers find a market for their products when all these young groves come into bearing?" You, no doubt, have heard this question asked. Or, "What will become of the deciduous fruit-producers when they face the necessity of selling three to five times their present output, as they will when the constantly increasing acreage becomes a market factor?"

Such inquiries indicate a lack of understanding of the true situation. The producers, themselves, have no fear of over-production. A spirit of confidence such as the State has probably never before experienced now possesses the organized growers of California. This spirit was paramount at the recent Riverside convention.

ORGANIZED MARKETING RECEIVES GREAT BOOST

We venture the opinion that nowhere in the United States has ever before been presented such convincing arguments in favor of co-operation among agricultural interests as were promulgated at Riverside. Recognized throughout the land as a leader in this movement, California again showed that she stands ahead of all other States in progress made along these lines. Without exception the representatives of the various organizations, such as the California Fruit Exchange, the Walnut Growers' Association, the Alfalfa Growers' Association, the Berry Producers' Association, and many others, expressed the belief that NO MATTER HOW MUCH FARM PRODUCE IS GROWN IN THIS STATE, A PROFITABLE MARKET CAN BE CREATED FOR IT! Think what this means to the producers and to the State! Surrounded as they are by conclusive evidence of the value of these associations, it seems almost inconceivable that any of our growers could be content to "go it alone."

No class of farmers faced more discouraging prospects after the signing of the armistice than did the lima bean-growers. They formed a pool, created an association, and sent personal representatives East to find buyers. As a result, they succeeded not only in moving 80 per cent of their product in two months (after it had been offered repeatedly at give-away prices, with no buyers) but also in bringing the market value up from $6.75, at which the opening sales were made, to $8.00. They accomplished this remarkable feat principally by guaranteeing a price for a certain period of time, thus protecting the dealers against loss, the fear of which had restrained their operations. And by placing these beans "in circulation" at a time when they were badly needed, the growers actually lowered the retail price!

ASSOCIATIONS HAVE POWER TO BENEFIT THE CONSUMER

Even more startling evidence of the value to the consumer of these farmers' associations was brought out at the Riverside meeting. One case was cited where the association, more far-sighted than individual growers could ever have been, actually held the price of their product for many months far below the value created by normal laws of supply and demand. This was done in order to encourage its use and retain the confidence of the people. This hitherto unheard-of achievement was credited to the Berry Producers' Association, which held the retail price of strawberries on the San Francisco market at 10 cents a basket, when they could have been sold at 20 or 25 cents, simply in order to build up future trade and confidence. This same association, by furnishing canners with cheap fruit for jam and jelly-making purposes, also succeeded in giving remarkable stimulation to this angle of their market, and secured the co-operation of distributors in building up a tremendous public demand for these products.

Who can say to what limits this movement will extend? Instead of boosting the already painfully high cost of living, the tendency of the farmers' organization is, rather, to stabilize markets and frequently actually to lower the cost to the consumer, while at the same time greatly increasing the growers' share of the returns. Before the formation of their organization, the almond growers, with their product retailing at the same price as today, received just 50 per cent less than they do under the present system, according to George W. Pierce, their manager.

INCREASED RETURNS TO GROWERS; SAVING TO CONSUMERS

And so one could name scores of similar examples of direct benefit to the consumer. Desiring a stable market, the growers' organizations consider first, the satisfaction of their customers. This means the development of standard containers, eventual elimination of the practice of "facing" boxes or baskets with the best fruit, establishment of rigid commercial grades, and the maintenance of a price that will secure wide distribution.

In other words, the organization as a whole is able to take a broad and far-sighted view of the situation. It strives to build for the future, to stabilize market conditions, to tackle problems of legislation, transportation, purchasing, and distribution entirely beyond the scope of the individual grower. Moreover, the association can, as has been demonstrated, perform this service at a cost to the individual member so low as to be almost negligible. Only a narrow-minded, superficially-inclined critic, who had not made a sincere study of the true situation, could see anything but ultimate benefit to the consumer, the community, the State and the Nation in the formation of properly organized producers' co-operative associations.—J. C. K.

G. H. HECKE, State Commissioner of Horticulture and newly appointed director of the recently created State Board of Agriculture: "The Western States represented at this meeting have many interests in common. Throughout the territory which we have the honor to represent, the industries of horticulture and agriculture are coming rapidly to the front. Bounded as we are on the east and south by the Rocky Mountains and the great desert, on the west by the Pacific Ocean, and on the north by the great snows, the eleven Western States, together with our neighbors, British Columbia on the north and Lower California on the south, occupy a position peculiarly fortunate with reference to the natural distribution of plant pests. The Territory of Hawaii, because of its geographical situation, enjoys a similar advantage. It seems logical that we should endeavor within the territories thus protected from invasion by natural means to add to nature's barricades man-made plant quarantines to prevent the introduction of these pests when carried by human agencies." (Out of this scheme there arose, at the convention, a "League of States" with a strong organization and a well defined purpose.—Ed.)

GEORGE W. PIERCE, president, California Almond Growers' Exchange: "When our association was formed, with almonds retailing at the same price they are bringing today, the growers received just half as much as they do now. We believe that co-operative selling by business methods is the only thing that will permit us to remain in the game. We are working along stable, progressive lines, extending our market into small centers, even at the risk of being unable to fill orders of the larger buyers. This is done in anticipation of the time when production will be greatly increased; we purpose to educate the people to eat almonds and to supply buyers in all sections of the country. We have a view, also, to holding down the retail price. It has been asked whether we could not compete with the imports from Spain of Jordon almonds. They can be grown in this country, although they are not prolific. So far we have not found any machine which will crack them cheaply enough to compete with the hand labor available in their native land. I understand men are employed there for the cracking

(Continued on Page 35)

About the Strawberry Bush

ANY reader unacquainted with the facts might place the "strawberry bush" in the same category with the ham tree, the spreading chestnut vine and the sweet-potato hedge.

But there is a strawberry bush, and it is illustrated on our cover this month. It is not a small plant, but a true bush, standing 10 to 18 inches high and bearing large quantities of the most delicious fruit.

With the strawberry season at hand, the appearance of this new race of berries, claiming widespread attention among the horticulturists of the West, comes in for timely consideration. This is what is known as the Ettersburg strawberry, a product of Humboldt County, California. The fruit is unlike that of any other strawberries in the commercial markets and not only does this variety deserve consideration because of the flavor of the fruit, but also on account of the peculiar characteristics of the plants. They thrive in comparatively poor soils and under extremes of weather conditions that would be fatal to the ordinary types of strawberries.

The Ettersburg strawberries are the result of thirty years' experimental work with several types of wild berries common to the Pacific Coast of the two Americas and the wild Alpine berry, crossed with ten or more of the common garden varieties. Out of some 10,000 seedlings which were fruited by the originator, Albert F. Etter, during a generation of experimentation, 200 or more have been found worthy of retention. These include a great variety of flavors.

Many Wild Plants Used

In this unique field of strawberry breeding, Mr. Etter began with a few plants of the sand strawberry of Callao, Peru (the Fragaria chiloensis, indigenous to that country and other sections of the Pacific Coast). This is the common beach strawberry, thriving on the wind-swept bluffs from Alaska to the most southerly point of South America, varying in foliage and fruit according to the location, but having some general characteristics in common. Chief of these is the deep-rooting system which makes it possible for the plants to cling to precipitous cliffs and to suck from the arid soil sufficient moisture to produce fruit and vines.

Another feature common to the Pacific Coast wild strawberries is a tough, leathery foliage which serves as a protection alike from the salt spray of the ocean, from extremes of heat and cold. It was these characteristics which first prompted Mr. Etter to study the seemingly worthless Peruvian beach berry, with a view of propagating a race of berries of wide adaptation that would thrive under conditions inimical to the culture of berries of the garden varieties. A cross of this strawberry with an inferior seedling of the Sharpless and Parry, gave, among twelve others, the first successful hybrid, named the "Rose Ettersburg." Since then, Mr. Etter has made numerous other crosses, using the Cape Mendocino beach berry and others of the sand berries of the Pacific Coast, the wood strawberry (Fragaria Californica), and the Alpine strawberry. The latter plant is directly opposite in type to the beach berries, being of exceedingly fragile structure. Combined with these varieties, in each of which there are several forms, were ten or more of the standard commercial types. The result is a race of berries of greatly varying characteristics, out of which a comparative few have been selected because of features that will recommend them especially to the commercial markets.

Remarkable Characteristics

The Ettersburg hybrids, like their wild ancestors of the Pacific Coast, have the deep-rooting system which is, perhaps, their best recommendation to the planter. Because of it, these plants have been able to thrive and bear fruit in the Southern California desert where the temperature registered from 110 to 120 degrees F, and the soil was white with alkali. A peculiarity is that many of the hybrids appear to do best in comparatively poor sons, having a ten-

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Grow Good Fall Potatoes

THE lowly spud, no matter what its market status, is always a public figure. When not an object of apprehension among consumers, it is likely to disturb the equanimity of the growers. And when prices are high and problems of production on the increase, as at present time, there is scarcely any person who is not affected and interested.

The crying need at present is better metods of production. Too often seed is selected from the bins instead of from the fields. Pedigreed seed is scarce. Disease is prevalent. If one may judge from the deliberations of growers and inspectors at the recent Riverside convention, there is destined to be an awakening. Now, when the fall crop is about to be planted, is a good opportunity to apply the principles of scientific management.

There is a better opportunity of profit from the second or fall crop of potatoes than from the spring crop. The second crop will keep through the winter, making it unnecessary to throw the crop on the market irrespective of prices, or to keep it in expensive cold storage. In any case, the farmer who finds potato raising most profitable is the one who grows two crops of potatoes each year and who studies and applies intelligent methods. July and August are planting months and preparations must begin at once.

Crop rotation is necessary in order to achieve success. If the spring crop was quite free from disease and the soil fertile and in good tilth, a fall crop may be grown on the same soil, if there is plenty of water to give it a good start.

Care of the Soil

Very seldom is it safe to grow a third crop of potatoes on the same soil without some other crop intervening or without a cover crop being grown and turned under for green manure. After potatoes, beans, corn or other cultivated crops have been planted for several seasons, it is good practice to seed the land to grain and follow with alfalfa or some other legume for a few seasons, turning under a final crop before changing to a cultivated crop again. At some stage in the planting scheme a thorough fertilizing with stable manure should be given if it can possibly be obtained. In any system of maintaining or increasing the fertility of the soil, crop rotation should be included; yet crop rotation and turning under green legumes cannot entirely take the place of applications of stable manure or commercial fertilizer.

Preparing the Soil

Perhaps the greatest factor in getting a good stand with the fall crop (next to the seed problem, which is discussed later in this article) is that of making the soil cool and moist to a good depth. To plant in hot soil, insufficiently irrigated and cultivated is to court disaster, no matter how much care has been given the selection of seed. On light, sandy-loam soil, irrigate heavily about eight days before the time to plant; use the furrow system and put the water well down and all through the soil. Just as soon as possible, harrow or disc across the furrows. In heavier loam or clay loam, plan the irrigation about two weeks before planting time.

From three to five days before planting, irrigate again, using the flooding method if possible rather than the furrow method. As soon as dry enough to get on the ground with team or tractor and implements, plow to a depth of 8 to 12 inches. Harrow very thoroughly at once and plant immediately. Be sure not to neglect the preparation of seed while the soil is being made ready.

There are three most important things to be considered in managing potato soil. They are drainage, content of organic matter, and preparation. Often the best second crops are grown on rather heavy soils because these soils contain more organic matter and are cooler. If the light soil has had plenty of stable manure applied a month or more previous to planting time, or if green legume crops have been plowed under, and have decayed and become well mixed with the soil, then the soil is in good condition, providing it is naturally quite rich and is well drained. There must be air down deep for potatoes. If drainage is poor the water excludes the air and the tops will be light green and both tubers and tops small.

Seed Potato Problems

This is the right time to select and prepare seed for the second or fall crop of potatoes. Securing seed for this crop is perhaps the most difficult problem the grower meets and the condition of the seed has great influence upon the stand. Many times the best seed is that which has been held over from the crop of the previous fall. Much depends, however, upon how the seed has been kept; if in cold storage which has been too cold or changeable, permitting too much sprouting or perhaps killing the eyes, results are poor. It is often difficult to determine from the appearance of the old tubers whether they are vital and will produce robust plants. The man who grows his own seed at home and grows it properly, will as a rule, do better than the man who depends on getting his seed from some other section. Growing potatoes for seed is a science in itself.

Seed from the spring crop may be planted for the fall crop the same season if it is properly prepared and matured. Many failures to get a stand can be attributed to the lack of maturity of the seed.

Methods of Maturing Seed

Successful growers are using the following methods of preparing seed from the spring crop. They go through the field and dig the choice

(Continued on Page 32)

Lucky Readers Win Cash Prizes

Here is the list of winners in the Orchard and Farm Prize Contest for "Helpful Hints," as selected by a board of judges composed of experts on the staff of the University of California Agricultural Experiment Station:

FIRST—Anne Page, Plantations, Cal. ("Our Venture With Sheep," in June, 1918, number.)	$50.00
SECOND—W. D. Swartzel, Box 555, San Gabriel, Cal. ("A Hen For Each Tree," in May, 1919, number.)	25.00
THIRD—J. L. James, 17 Eucalyptus Road, Berkeley ("An Efficient Orchard Plan," in January, 1919, number.)	15.00
FOURTH—J. E. Gamalielson, Hilo, Hawaii ("How to Cure Egg-Eaters," December, 1919, number.)	10.00
FIFTH—R. E. Davis, Linden, Cal. ("Saving Prunes in Wet Weather," May, 1919, number.)	5.00
Total Cash Prizes	$105.00

Two new contests commence with this issue. READ ADVERTISING COLUMNS CAREFULLY FOR ANNOUNCEMENTS. More than thirty entries were published in the contest just closed.

The judges also mention especially the following contributions:

Edwin W. Pritchett's "Goats on a Desert Homestead," in May, 1919, number.

Mrs. Ed De Lory, Columa, Cal., "How to Kill 'Brakes,'" in May, 1919, issue.

J. Henry Gysbers, Fairoaks, Cal., "Trenching Vegetables," in May, 1919, issue.

F. Gilmour, Tajunga, Cal., "As One Farmerette to Another."

L. A. Bridinger, Santa Rosa, Cal., "Raising Goats."

(The winners were selected by number. No names were given the judges.)

The Biggest Boost the Silo Ever Had

Has the value of the silo been over-rated? If you believe so, read what dairy-farmers are doing in a land of warm winters and perpetual pasture. "Canning for the cows" is now a stock phrase in a country where it was freely prophesied that the silo would never find a place. Mr. Robson tells you why.

By J. A. Robson

AN analysis of the dairying industry of Humboldt county, California, furnishes a striking demonstration of the value of intensive methods of production.

For many years Humboldt held the lead in this industry in the State, the soil and climatic conditions naturally favoring the development of dairying, but this lead was lost during recent years to other sections such as Stanislaus county and the Imperial valley, where the inauguration of vast irrigation systems made it possible to turn hundreds of barren acres into green pastures furnishing the raw material for the making of milk.

No such assistance has come to the aid of the dairymen of northern California, however, and neither the acreage devoted to dairying nor the number of cattle in the herds has been appreciably increased. Yet in the past few years the output in milk and milk products has been almost doubled with the result that, during the 1918 season, Humboldt, according to local statisticians who display convincing official figures, again outstripped the Imperial valley section in butter production. This is popularly attributed among our dairymen to the fact that the value of purebred stock has long been recognized by Humboldt producers and the "scrub" herds of other days have given place to cows that are known by breeding and test to be capable of returning a profit to their owners.

Humboldt county has "pioneered" in many movements leading to the development of the State at large. The first creamery in California was erected in this district, in Ferndale, the center of the rich dairy lands of the Eel River valley. The Humboldt Dairymen's Association was the first organization of its kind in the State, designed to further the interests of the industry by bringing about the purchase of better stock, the improvement of farm conditions, and the initiation of such legislation at Sacramento as would benefit the dairymen throughout the State. The Humboldt Dairymen's Association inaugurated the first cow testing association in California and the employment of the first farm adviser in the State, the association designed to weed out the non-producing cows through butter fat tests and the adviser calculated to assist the dairymen in the production of forage crops. All of these organizations have rendered invaluable service to the northern dairymen and it is to these factors that the Humboldt country must attribute much of its success.

A Typical Humboldt Dairy Ranch

Note the compact and convenient arrangement of buildings on this up-to-date farm. The concrete base milking-barn, although not of the most expensive construction, is designed for efficiency and long life.

Natural Pasture Lands

The dairying district of Humboldt County is confined for the most part to the rich bottom lands of the Eel and Mad Rivers, lying to the south and north of Eureka, and the lowlands skirting Humboldt Bay. There is a limited section given over to dairying in the Capetown district in Southern Humboldt, and also a restricted area along Redwood Creek, near the northern boundary; but the big dairying region is found in the level bottom lands of the larger streams.

Dairying was begun in the bottoms as early as 1874, and within a generation practically all the cleared land along the rivers was given over to this industry. Red clover grew prodigiously and this, combined with rye grass, made excellent pasturage with little care on the part of the dairy operator. Under such conditions it was natural that as fast as the bottoms were cleared of timber they should be converted into dairy farms. Today, the dairying district of Humboldt is very little extended, the farmers, for the most part, depending on getting more out of both their land and their cattle by the use of intensive methods rather than by expanding their holdings.

Because of the moist climate and rich soil, which provides green pastures the year around, the silo was rather late in making its appearance in the Humboldt country. But the last few years has seen its adoption by hundreds of the most progressive dairymen and the time is not far distant, observers believe, when the entire region will be lined up solidly in favor of this great feed-saving device. The Farm Bureau has done much to convince the Humboldt farmers that, instead of having little use for the silo, they need it even more urgently than residents of many sections where it has long been in use.

While it is true that the pastures of the bottoms remain green throughout the year without irrigation, the moist climate of all the Coast section is not conducive to raising and curing hay for winter feeding. The dairymen, therefore, have been in the habit of shipping in their hay to supplement the beet and other crops used in winter feeding, when the pastures are wet.

Need of Silos Recognized

During the spring and early summer, however, the supply of succulent green feed far exceeds the need and much of it is wasted. When this fact was brought to their attention, the Humboldt dairymen were quick to see the advantage of storing this surplus of green feed for winter use. Now at least one-third of the Humboldt dairy ranches are equipped with silos of varying types, and it is freely prophesied that the higher ground which now serves as winter pasturage will eventually be sown to forage crops to fill the ever-increasing number of silos.

While there are many kinds of silos in use in this section, the wooden-hoop type appears to have found general favor, both on account of its inexpensiveness and the fact that it can be entirely farm-made. An educational campaign waged by the Farm Bureau stimulated interest in this type of silo, and many of them were built last season under the direct supervision of the farm adviser or his associates. Upon these occasions, the affair was made a holiday, the farmers from the entire neighborhood assembling for the silo "raising" and enjoying a picnic luncheon served by the ladies. From the fashioning of the wooden hoops, made in a master hoop on the ground, to the placing of the tongue and groove-lining, the silo of this variety required but two days in the building. In this country the cost is about $1.50 per ton silage capacity.

The stave type is also popular here. Redwood is universally used for lining because its freedom from resin leaves the ensilage sweet and untainted after months of compression, and its non-shrinking qualities make it the ideal protection under varying weather conditions. There are also a few concrete silos in use, but since this is essentially a lumber country, their recognized advantages have not resulted in as general adoption as in localities where wood is scarce and expensive.

The cow testing association has

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Starting the Silo

The wood-hoop type is popular among Humboldt dairymen. Neighborhood co-operation shows quick results as evidenced by the picture on the right of this page, taken ———.

Two Days Later

Showing redwood sheathing. Redwood also is used in the "ready-cut" silos which, because of their durability, attractive appearance and ease of erection, are gaining in popularity.

More Light on the Poultry Situation

"Biddy goes on strike," was once a favorite headline for the annual news item concerning decreased winter production and the high cost of eggs. Now we know that Biddy did not go on strike, but merely obeyed her natural instinct to work shorter hours on short days. In fact, experiments in the use of artificial lights have shown that Biddy was even willing to put in much longer hours, provided darkness was not allowed to overtake her. The past winter has brought out more strongly than ever the fact, long supported by Orchard and Farm, that the proper use of lights will greatly increase egg production. The writer of this article is a member of the engineering department of the General Electric Company, and in connection with his work in the electric-lamp division of that firm, has made a special study of artificial lighting in its relation to poultry-raising.

By Kenneth A. Rarick

"EGG PRODUCTION can be increased in fall and winter fully 300 per cent by the use of lights; this has been demonstrated to me by personal experience."

This statement, made by Mr. J. B. Roe, a well-known Barred Rock breeder of Pasadena, Cal., comes as a very timely and striking argument in favor of the much debated idea of using artificial illumination as a means of increasing winter egg production. Although a poultryman connected with one of the larger Leghorn farms in New Jersey states that over twenty years ago he successfully used lights to increase winter egg production, progress in this line was for many years impeded by the antagonistic opinions expressed by prominent poultrymen when the idea was first suggested to them.

However, a large amount of egg-production data, compiled during the last few years by poultrymen interested in establishing the commercial value of this practice, indicates very conclusively that the idea is already past the doubtful experimental stage. These records clearly denote that the use of properly applied light will greatly increase the production of fall and winter eggs, and, by giving the poultryman control over the laying qualities of his fowls, also will enable him most advantageously to distribute the egg production throughout the year.

Sound Basis for Claims

There is no mystery or miracle about it and a careful survey of the claims made will show that they rest upon a perfectly good foundation of science, economics and common sense. While the use of illumination cannot be expected in every case to bring about a greater annual egg production, it can and does make the hens lay more eggs in the winter, when they are worth more. And some experiments have shown that even when summer production is cut down because of the enforced winter laying, the total annual production is actually increased.

The general reason for the increased production of eggs in lighted coops is that the hens have more time in which to eat. It takes a healthy hen just about so long to convert a given amount of the right kinds of food material into a normal egg. A hen lays heavily in the spring and summer principally because she has the long days in which to digest the amount of food which is required to furnish body maintenance, and enough more to form the eggs. In the fall and winter, under ordinary conditions, she has only eight and one-half to nine hours in which to do this; with artificial lights it is possible to prolong her day to fifteen hours. Hence lights are of primary importance for their use in winter operations, when the days are too short to permit the hen to eat and digest the proper amount of food to produce eggs.

The greatest variation in the lengths of the "working" days is over 40 per cent, and exhaustive experiments have shown that there is a close relation between length of day and quantity of production. Since many of the winter days afford only about seven hours when there is sufficient light for the birds to scratch and eat freely, this means a minimum day which is less than half the longest day in June. And, in addition, this shortest day comes at the time of the year when the atmospheric temperatures range the lowest and consequently when the greatest demands are made upon the reserve food supply of the bird merely to maintain her normal body temperature. This is naturally very high, comparatively speaking, averaging 106 degrees Fahrenheit, and almost instantly affected, as experiments have shown, by changes in weather.

The results obtained from the use of artificial lighting are dependent to some extent, of course, on generally managing the flock so as to emulate spring conditions. So far as feed is concerned, there appears to be no "best" ration. More feed, more water and more exercise not only result in greater egg production but also in a general increase in the health and vitality of the fowls.

No "Daylight Saving" In This Poultry Plant! "Quitting Time" Comes Only When The Electric Lights Are Turned Off.

How the Idea Originated

The use of lights owes its present vogue to an accident, or rather to a series of accidents. A Southern California producer, whose work forced him to care for his flock after dark, installed lights in his poultry runs so that he could more conveniently display his stock to prospective buyers. Later, he was led to suspect that the lights, which were burned a great deal, increased the laying qualities of the hens; he experimented, and obtained results so astonishing that his technique was adopted by many other California poultrymen. The idea has also gained much headway in the East and the Cornell agricultural experiment station is enthusiastically sponsoring the practice.

George Newell, in his book, "A Revolution in Egg Production," says that he first observed the effect of light in caring for his flock late at night in the winter time, after the birds had been on the roost for some hours. The lantern light often brought the birds off the roosts to attempt feeding. In fact, he frequently found it necessary to turn down the light to a minimum, before he could get the birds back on the roost. Likewise he observed that when he placed feed in the box for cockerels late at night by lantern light, they immediately got down off the roost to eat out of the box. In each case he was confronted by the question: "Why?" and he finally concluded that they must be hungry, but had to wait for a light before they could eat.

He carried his observations still further when he found the cockerels on several occasions eating from the box at 10 o'clock on bright moonlight nights, but unwilling to scratch in the litter for feed. He concluded that the birds had sense enough to know that the light was not bright enough for scratching in the litter, and that they were actually hungry, and therefore sought the boxes.

In the State of Washington the idea spread following the marked success of one individual poultryman. To Mr. and Mrs. George B. Shoup, now poultry specialists at the Western Washington Experiment Station, Puyallup, Wash., is doubtless due the credit for first pointing out to poultrymen of that State the full value of winter lighting, and for developing a wise and conservative program for its permanent use. Mr. Shoup also conceived the idea from observation of the effect of lantern light. As large poultry producers at Lynden in Western Washington, they had several thousand hens to feed and found it necessary in the winter season to begin work before daylight. Upon their arrival in the pens with a lantern, or even at the striking of a match, all the fowls would immediately hop off the perches and begin to scratch and eat. Their experience was similar to that of another West Washington poultryman who expressed his experience by the slang phrase: "We simply put the lights over and the hens laid for it."

Many Eastern Enthusiasts

In Erie County, New York, lighting is being used rather extensively and certainly very successfully. This local development has been due to the fact that electric current generated by Niagara Falls waterpower is very accessible and very cheap. Some farmers and poultrymen, by virtue of quantity consumption, are able to obtain a rate of 3½ cents per kilowatt hour. Over 150 poultrymen have been using lights in this section from one to three years each.

Many types of lighting systems are in use at the present time, but due to its convenience and greater safety, electricity is by far the most satisfactory type. Where the size of the poultry establishment warrants it, and the capital is adequate, private electric plants are frequently installed. These plants have been developed until they are practically "fool-proof." On ranches dependent on such a plant for domestic light and power its use also for lighting the poultry houses may increase production sufficiently to pay for its installation!

Where no other light is available, the cold-blast barn lantern, burning kerosene, is used. It needs daily care, and great caution to see that the light does not rise too high and set fire to the building. The most commonly used light is the gasoline lantern with the large fount. This needs filling only once a week, lights a radius of fifteen feet, gives a brilliant light, and costs about 3 cents a day to run. Another gasoline light operates on what is known as the hollow-wire system. In this system, the gasoline is forced from a large supply tank through a hollow copper wire, by air pressure in the tank. Objections to this system are that each light has to be generated separately, and the wire sometimes becomes clogged; it is liable also to spring a leak at the joints.

The most satisfactory gasoline mantle lighting system for long houses is the tube system. The gasoline is first forced into a large generator, which makes sufficient gas for all of the lights. This gas is led into one inch, or larger, gas pipe, which has an air intake from outdoors. The air and gas are mixed automatically to the correct proportion (95 per cent air to 5 per cent gas), and each mantle is then lighted with a torch or match. There is no delay in lighting after the one generator is heated, and no dust from the house is drawn into the lights and mantles.

The running expense of either of the two latter systems is about 3 cents per light, and 3 cents for the generating light, with gasoline at 20 cents per gallon. The supply tank of both of these systems is filled once a week.

A California System

J. B. Roe of Pasadena advises that he first installed electric lights in his selling or "showing" place in 1915, using the 25 candle-power Mazda, one to every twelve feet.

In a recent report of his methods, Mr. Roe says:

"For flock matings for egg production, I have two 'continuous' houses, each 100 feet long by 16 feet wide. These houses are divided by partitions into four sections and each section into two compartments. In the center of each 12x16-foot space, I have a light. I keep about fifty birds to every 12-foot space, but this number depends on the birds I have and what use I am making of them. There are no separate scratch sheds. Sometimes for every 12 feet of space I have 75 or more birds.

"The window in each 12-foot space is about 8x4 feet. I have yards in front of these houses, leading out 100 feet, every yard having in it three orange trees. Under the second tree from the house there is a water fountain, with a continuous drip, and I also keep water in the house. In

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Why California Must Fight Weeds

Weeds annually take a toll of millions of dollars from California farms and orchards. In this article, Mr. Newman, who is a field deputy of the State Commission of Horticulture, gives some startling facts and figures which will open the eyes of agriculturists accustomed to regard a certain quantity of weeds as a necessary evil. Approved methods of weed control and eradication will be outlined next month.

By O. W. Newman

(Written Especially for Orchard and Farm)

IN TWO PARTS

PART I

AGRICULTURE is an everlasting warfare on weeds. Weeds are not usually listed among the causes for failures in farming; in fact failures are usually ascribed to four factors: Poor climate, poor soil, inferior seed, unwise management.

But under the latter head weeds may be prominently mentioned. They gain a foothold where conditions are right for their development. They, therefore, are included in the causes for preventable failures. A good stand of crops leaves no room for weeds. If ideal conditions for the production of crops are maintained, the weeds will disappear; hence, the rule for eradication: Keep the land busy with good crops. There is no surer sign of lack of efficient management than a weed-infested farm. There is only one good result that weeds can bring about; that is to prove by their presence that there is a weak point in the established system of agriculture. The control and eradication of weeds is then one of the most important problems which the farmer has to face, for most weed control is based on the fundamental principles of good farm management.

Weeds Along Railroad Tracks

Showing how they are distributed by agencies of man. No doubt the seeds which brought about this infestation were carried in the hay used by the construction gangs working along the tracks.

What Is a Weed?

The common definition of a weed is "a plant which is out of place." Oats in a wheat field would be classed as weeds, but in general a weed is any plant not grown commercially or for pleasure which intrudes itself in the place of the commercial or cultivated crop. Some weeds, because of their persistence and general undesirability, are classed as noxious. Some States have laws especially designed to prevent the spread of noxious weeds.

Many estimates have been made of the damage caused by weeds. In North Dakota the agricultural college estimates the loss in that State at $50,000,000 annually. In many parts of the Middle West entire farms have been abandoned because of quack grass, a pest the growth of which is somewhat similar to that of Bermuda grass. In California, Johnson grass, star thistle and water grass have ruined thousands of acres; in fact, the water-grass situation is so serious that experts estimate three years as the average life of a rice field. It must then be planted to other crops until the water grass can be controlled. In the California Legislature of 1919 a bill was introduced providing for an investigator to study rice weed problems; unfortunately this bill failed to pass. It is safe to say that weeds constitute fully 20 per cent of the loss in California's agricultural efficiency.

Weeds are harmful in four general ways: First, they reduce the yield of the agricultural crop and take up space which should go to producing the crop; second, they use up the moisture which should be stored in the soil; third, they destroy the fertility of the soil; fourth, they lower the value of the land.

Weeds Reduce Yield

A trip through the grain belt of California in the spring reveals many wonderful sights, and the interested stranger might be heard to emphasize the beauty of the fields of golden mustard. Fields once bearing stands of golden grain now bear a mixture of grain and mustard, or are given over to the latter plant entirely. Mustard is not a pest in the sense that it is hard to kill. It succumbs readily to cultivation, but it is a good illustration of the old adage: "One year's seeding makes seven years' weeding." A field which supports a large crop of weeds cannot produce a full crop of grain. Neither can the grain reach its maximum development when it must compete for food, air, water and light with the undesirables.

Weeds Reduce Moisture

Irrigation investigators in Wisconsin found that in that State approximately 450 pounds of water is required to produce a pound of potatoes and that for every pound of corn there must be 589 pounds of available water. In Southern California careful estimates show that it takes 7000 pounds of water to produce one box of navel oranges.

The average rainfall in California is between 15 and 24 inches. Out of a 24-inch rainfall tests show that only 50 per cent actually enters the soil as available moisture and that only 50 per cent of this ever reaches the crop. This would mean an available supply of only 1,500,000 pounds of water per acre. Consequently, the fewer plants there are to draw upon this supply, the better their chances of reaching maturity in perfect condition. This illustrates the importance of the moisture supply and the necessity of storing up a reserve in the soil. Every means should be employed by the farmer and orchardist to get the maximum growth from his natural water supply, and to reduce the expense of irrigation. It has been said that the beginning of wisdom in irigation is the economic utilization of the natural precipitation. In order to increase the efficiency of soil moisture and maintain a good supply during the long growing season a careful investigation of the reasons for the loss of water and of the means of maintaining a suitable supply is necessary. As California becomes more thickly populated, and water is in greater demand, this phase of scientific farming will become increasingly important.

Destroy Soil Fertility

Weeds not only take up space which should be occupied by a commercial crop, but they rob the soil of plant food which should go to nourish this crop.

The following is an extract from Canadian Experiment Station Bulletin No. 128: "Weeds naturally make use of the same foods as the cultivated plants among which they grow. Consequently they deprive the crop of a large amount of the available nourishment; and rob the succeeding crop as well. For example, an analysis of the Russian thistle by Snyder shows that it contains from 12 to 17 per cent as much nitrogen as there is in clover; and an ordinary thistle of this kind covering a square yard takes more potash and lime from the soil than two good crops of wheat from the same area."

In 1905 Minnesota produced approximately 200,000,000 bushels of small grain. This grain was "docked" one pound per bushel because of weed seeds, or 200,000,000 pounds. A. D. Wilson of the Minnesota Experiment Station says: "Had the land been free of weeds, the same amount of plant food, moisture and labor would have produced over three million bushels of wheat, or the equivalent in other grains. This makes an annual loss due to weeds of about two and one-half million dollars, or an annual rental of about 30 cents per acre on every acre on which small grain is grown."

Since, therefore, all of our grain and vegetable crops, and most of our tree crops, draw their nourishment from the first two feet of soil, it is vitally necessary that we conserve as much as possible of the resources of our lands for our best paying crops.

Weeds Reduce Land Values

A wise farmer often estimates the fertility of a farm by the character and luxuriance of the vegetation growing upon it, but the value of land which is covered with noxious weeds is much less than land free from these pests. In California we have thousands of acres which are covered with the yellow star thistle. A careful estimate by representatives from the Agricultural Experiment Station, at Berkeley, places the cost of cutting the star thistles on one farm at $10 an acre. There are 8000 acres infested in this particular section. Cutting the yellow star thistle for one season would not eradicate the pest. The value of this land is considerably reduced by the presence of this weed. It is impossible to grow grain on this land and the crops that are grown must have intensive cultivation. In Central and Southern California many acres are given over to the production of Johnson grass, a weed which grows very much like morning glory, from perennial underground roots.

As an illustration of what other investigators say about weeds, the following extracts are taken from various State experiment station bulletins. Wisconsin: "There are many farms in this State on which 25 per

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"I AM firmly convinced," wrote Mr. Newman in the letter accompanying this article. "not only that California is the greatest horticultural State in the Union, but that the future will prove the California farmer to be the greatest farmer in the Union. His education, his foresight and the institutions we have to assist him will place him in a position to carry on intensive farming in a way that has never been witnessed in the United States."

A Mixture of Alfalfa and Plantain

Is neither profitable nor beautiful. Not only do these noxious weeds appropriate space which might be used for a profitable crop, but they also rob the soil of valuable fertility and injure both the feeding and market value of the hay.

Harvest Hay With Hogs; Peddle It as Pork

That is what the writer of this article is doing. As a successful alfalfa and hog-raiser of Antelope Valley, Los Angeles County, he knows what he is talking about; and you will like the simple, direct way in which he describes his methods. It seems to us he has left very little to be said on the subject, but if questions occur to you which are not answered in the article, send them to Orchard and Farm and we will be glad to refer them for reply to Mr. Graham, who has expressed his willingness and desire to help any farmer who would like to apply his methods.

By Donald H. Graham

THE forage system of feeding hogs appeals to the modern farmer from several points of view.

The use of this system reduces the cost of equipment to the minimum.

It raises the fertility of the soil to the maximum.

It is the sanitary method of feeding.

It reduces the labor cost to the lowest possible point.

And, best of all, scientific investigators such as Prof. John Evvard of Iowa and Prof. J. I. Thompson of the University of California, have proved this to be the most economical method of pork production.

With these facts in mind, I decided, when I went into the hog raising business, to use part of my 80 acres of alfalfa for pasture. I put my hog lots in the middle of the 80-acre field, so that the lane which divided my alfalfa into 40-acre plots also divided my hog lots. This enabled me to use the regular lane for a hog lane also.

In order to reduce the labor cost, I endeavored to concentrate all equipment. I put my farrowing house in the center of the hog land. From each pen of the farrowing house and from the individual boar pens, I made small runways into the alfalfa, so that all animals would have access to green alfalfa. In using the forage system, the colony farrowing house, or the individual farrowing houses represent the only large item of expense. I use the colony house because I consider it the greatest labor saver.

The first hog lots constructed comprised three acres each, fenced with American field fence, 26 inches high with 12-inch stays, and two strands of barb wire on top. I soon found these lots too large for the economical use of the alfalfa. Hogs do better on small lots that can be eaten down in ten days or two weeks, so I subdivided the original three-acre lots.

I turn the hogs into a lot when the alfalfa is from 6 to 8 inches high. The hogs like the tender shoots better than the coarser hay. The one and one-half acre lots will support from 20 to 60 hogs, according to the size, for about two weeks. As soon as the hogs have eaten the lot down (I never let them pasture it too close) I move them to a new lot. The old lot is then mowed, to cut off any coarse stems the hogs may have left, and immediately irrigated. The use of 12-inch stay-wire proved to be an error. It was no barrier at all to the small pigs. Now I always use wire with a 6-inch stay.

Accommodations for Hogs

Each lot is provided with plenty of clean drinking water in a trough; I do not allow the hogs in the irrigation ditches nor do I give them a wallow. Opposite the watering trough, on the other side of the lot, stands the shelter. This gives the hogs shade in the summer and protection from wind and rain in the winter. I use a very simple shelter made of 4x4 redwood posts, set in the ground, over which are nailed 2x4 supports for the roof. Wire netting is nailed to the 2x4's. The roof is then thatched with hay and straw. In the summer the shelter is entirely open; but in the winter I close it up almost entirely and use plenty of straw for bedding.

The forage system has other advantages than that of convenience in handling the animals. For one thing, the fertility of the soil is increased. This fact was forcibly brought home to me. A corner of my alfalfa land was difficult to irrigate, having been poorly leveled. It consistently produced a poor crop until I put the hogs upon it. For three years the hogs have used this poor land as a pasture with the result that although it is just as difficult to irrigate as before, it now produces an excellent crop of alfalfa.

Alfalfa Not Damaged

Many people ask me if hogs will ruin the stand of alfalfa by rooting. I always most emphatically reply, "No." If the hogs have plenty of food they will not root. If the pasture is short in the winter, however, I sometimes find it necessary to ring the noses of the old sows.

The sanitary feature of this system is an important one. The hogs are always in fresh, clean surroundings. Hence the chances for filth accumulation and for the development of disease are reduced to the minimum. Moreover, the disagreeable odor so often connected with hog raising is lacking on a ranch using the forage system.

The forage system is a great labor saver. One efficient man can easily take care of from 300 to 400 hogs, doing all of the work necessary, from the time the pigs are farrowed until they are marketed. Only occasionally it is necessary to give some assistance.

Balancing the Ration

The actual feeding is of course a matter of vital interest to all hog raisers. Experiments have shown that alfalfa alone will not make good pork, although a hog will grow and become fat when receiving no other feed. But alfalfa, supplemented by grain of some sort and either milk or some commercial protein concentrate, will produce the finest pork.

It has been shown by numerous experiments that the grains and some commercial protein concentrate produce the best results when self-fed along with alfalfa pasture. Here in Antelope Valley we have a sea breeze nearly every afternoon. This breeze and the blackbirds, at certain seasons of the year, play havoc with feed in self-feeders, so I gave up trying to use them. After some experimenting, and after studying the amount of grain consumed when self-feeding, I found that the following methods gave practically the same results as those secured by others when self-feeding:

The hogs are weighed when they are put on pasture. I then give these hogs ground barley or ground milo to the amount of 40 per cent of their live weight, in three feeds daily. With this grain I use tankage to the amount of 10 per cent of the weight of the grain.

Care of the Sows

The herd sows are kept on pasture from the time they are bred to within about 10 days of the time they are to farrow. While on pasture, the sows are hand-fed grain and tankage once a day; I allow each sow from a pound to a pound and one-half of grain per day, with tankage to the amount of 10 per cent of the grain. Care should be used in the winter, when pasturing sows on alfalfa. If the frost has affected it, the sows had better be taken off. If the sows are forced to eat frozen alfalfa, the crop of spring pigs will be very poor. The sows seem to get some sort of poison from this frozen alfalfa which causes the pigs to come in a weak condition or dead.

The pigs go on to pasture as weanlings. They are fed a slop consisting of "Sure-Milk," ground barley and tankage. "Sure-Milk" makes up about half of the ration. Gradually the barley is increased and the "Sure-Milk" decreased, until in about a month barley and tankage compose the slop. Then I begin dry-feeding. The hogs are kept on pasture until they weigh from 175 to 180 pounds. They are then from five to seven months old. When they reach the above weight I put them in a small pen with a board floor. Here they are fed only ground grain and tankage in self-feeders. In from ten days to two weeks they are ready to be sold to the packer.

Following the outline given above, I have been able to produce a hog weighing from 190 to 225 pounds, at from six to eight months of age. Such a hog will dress out from 79 per cent to 81 per cent of its live weight, and will give a "cutting yield" of from 71 per cent to 73 per cent—a yield that compares very favorably with that secured from top hogs in the Eastern markets. Such a hog always brings from one-quarter to one-half cent per pound above the local market quotation.

Inasmuch as it is possible for the commercial feeder, as well as the college professor, to get splendid results from this method of feeding, I see no reason why it should not become the general practice with all hog feeders.

Biggest Boost the Silo Ever Had

(Continued from Page 5)

been the thermometer by which the Humboldt dairyman has learned to gauge his herds. Through its records it was early made evident that cattle of pure blood produced a much higher percentage of butter fat under the same feeding and housing conditions than the scrub cows. The result was inevitable; the poor cows were converted into beefsteak and leather shoes, and their places on the farms taken by cattle of better breeding. There are many fine herds of Jerseys, Holstein-Fresians, and Guernseys in the Humboldt dairy field, the Jerseys being especially popular. Many local cows, registered with the Ferndale Cow Testing Association, have brought home prizes in the State contests. This year saw the organization of two similar organizations to serve the dairymen of the Northern Humboldt section—the Arcata Cow Testing Association and the Requa association, the one in the midst of the Mad River district, and the other at the mouth of the Klamath River.

In marketing, as well as in production, the Northern California dairymen have worked out a system admirably suited to the needs of the section. Following the organization of the first creamery, which was a co-operative affair sponsored by a number of dairymen and business men of the Eel River Valley, a large array of small creameries came into existence. It soon developed that this arrangement was unsatisfactory and the small creameries were gradually replaced by larger establishments. Today, the immense milk production of the Humboldt country is taken care of principally by four large condensing plants, which ship to all parts of the world. Between the creamery operators and the dairymen the closest co-operation exists, the latter concentrating their efforts on production alone, and the former caring for the manufacturing and marketing end of the business.

It has been said that the Eel River Valley has more cows to the square mile than any other place in the world. That these cows have brought wealth to the section is proved in the records of the two creamery plants that absorb most of the output. The $500,000 condensery of Libby McNeill and Libby at Loleta, on the edge of the Eel River Valley, turns out in the neighborhood of sixteen hundred cases of evaporated milk daily. The milk is received from within a radius of half a dozen miles of the plant. The powdered milk output of this establishment last season also was tremendous.

The California Central Creameries plant at Ferndale filled a Government contract for 750,000 pounds of butter for the navy alone last season, all made from the milk obtained within a radius of a few miles. The new plant at Arcata, operated by the same company, has received national distinction as the home of the American-made "Swiss" cheese, a daily average output of nine cheeses, each weighing 150 pounds, being maintained throughout the summer months. Prior to the war, approximately six million pounds of this variety of cheese was imported into this country, and the Humboldt section is now filling a large part of this demand through carload shipments to the Eastern markets of a new California product. During the last season the cheese production in Humboldt County increased from 253,602 pounds in 1917 to 898,880 pounds.

Potential Resources

In the great undeveloped water-power and waste acreages of the Humboldt country there is a vast potential wealth that will find its way into the coffers of the State when the two have combined to produce irrigated fields of alfalfa such as have made dairying possible in the Southern part of California. For the present, the dairymen are receiving rich returns on their investments in the lowlands and recently put up a game fight to secure a $10,000 State appropriation for use in the construction of breakwaters to prevent the flood tides of the Eel River from cutting away the silt soil of the valley floor. The measure passed the Lower House but was defeated in the Upper. A similar sum is available for use from the county and the residents of the district, but is considered inadequate and the renewal of the effort to secure State aid will doubtless be taken up during the next session of the Legislature. The residents of the Northern part of California feel that they are entitled to a just percentage of the State funds available for use in projects for the development of rural districts and hope, through united effort, to gain a recognition commensurate with their production in one of the essential industries of California.

Here's Real Porcine Contentment!

With such a start as this, a big litter of pigs soon commences to convert alfalfa into lard when turned into green fields. This scene gives a general idea of the arrangement of Mr. Graham's farrowing house and runs.

(See Article on Opposite Page.)

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Fig Prospects Look Rosy

It is likely that before many years the 15,000,000 or 16,000,000 pounds of figs annually imported from Smyrna will be supplanted by the home-grown product.

The area in the southwestern States and in California is equally as well adapted to the fig industry, it is now conceded, as is the Meander Valley of Asia Minor, and is more than extensive enough to produce many times the quantity imported into this country.

The annual production of Smyrna figs in California, which is almost the total yield of this country, is not far from 2000 tons, but within a few years the production likely will be greatly increased, for it is estimated that since the importations were cut off as a result of the war, 10,000 acres of Smyrna fig trees have been planted in the central San Joaquin valley.

With these large plantings come into bearing this country will be independent of importations of this most wholesome, sugar-saving fruit, and, it is believed, dried figs by the carload will be as evident in commercial movements as raisins are at the present time.

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What You Should Know Before

By H. C. Davis

AS A result of the rapidly spreading public interest in the goat industry, the question is being asked by many in widely varying situations, "How can I get into the business?" And there is no general answer to this question. "It all depends." For not only do the circumstances of the would-be goat raiser vary greatly, but, furthermore, there are many different phases of the business itself. In fact, one of the attractive features of this branch of stock growing is that it offers practical opportunities for almost any one in any circumstances who desires to get into the game.

The goat industry is a very adaptable one. With the back lot farmer and the range cattleman alike, and in all the degrees of environment between, there is a place for the goat. His niche is tucked away somewhere on every farm and vacant lot where there is either an experienced or an embryo stockman with even so slight an equipment as an understanding of animals. And every such stockman can profitably undertake the handling of goats on a scale in accord with his means and ambitions.

Milk or Mutton?

The two big divisions among goats, as with cattle, are between the meat animals of the range and the milch breeds of the dairy and, as is true of other kinds of stock, the raising of pure-breds of either type is a distinct branch. There is quite as great a difference between the range goat and the milch goat as there is between a Texas long-horn and a Jersey cow. But while most people are privileged neither to rear their own beef steers nor to maintain a milch cow on the lawn, any one can keep a goat, and it remains only to decide on the variety.

For the man who thoroughly understands the handling of range stock and can secure the range, or for the man who has a range that is worthless for any other purpose at the start, and can learn their management, Angora goats offer a splendid investment. The raising of Angoras has so thoroughly demonstrated itself as a paying business in different parts of the West and Southwest that the profits of the industry may be readily investigated by any one wishing to go fully into the matter. And experienced breeders in such localities as northern California, Oregon, Texas, New Mexico and Arizona are unanimous in declaring that the general introduction of Angoras into Southern California should prove a well paying venture.

Angoras are not only the meat producers of the goat family, but have also to their credit the beautiful, strong hair called mohair, which is yearly coming into more general use in manufacturing. Most people know of the durability of automobile tops made from mohair and of the remarkable wearing qualities of the plush used for the car seats on all our railroad lines, which also are made of mohair. Countless other articles dependent for their value upon strong texture are being constantly added to the list of mohair manufactures. It has also a distinct place in the ornamental field. Beautiful dress materials and hangings are being made from mixtures of mohair with silk, wool and cotton, and the range of such uses is increasing every day.

The Famous Angora Buck, "Dodo"

He won the championship in his class at the P. P. I. E. The mohair measured 41 inches in length and was sold for $379. The buck, an Oregon product, was purchased by an Arizona breeder for $500.

As Range Improvers

But, in addition to the man who would go into meat and mohair production as a business in itself, there are several other classes of ranchers who might do well to consider the Angora. It has been demonstrated repeatedly in Texas and similar localities that the stockman who properly handles Angoras on a range too poor for cattle or other stock within a few years finds himself in a position where he can profitably add cattle, sheep and hogs. The late J. E. McCarty, long secretary and treasurer of the National Mohair Growers' Association, once told his interesting experience in the Angora business.

"I came into possession of about 2000 acres of land," said Mr. McCarty, "that was so thickly set with small brush as almost entirely to exclude the grass and was considered worthless. It was hilly, in some places

Making a Start With Goats

A Practical Goat-Raiser

rocky, and the brush was so thick in many places as to be impenetrable for a man afoot. To sell it was impossible; to find some use for it was a problem." Mr. McCarty tried 25 head of cattle on this piece of land, only to find soon that they were starving to death. At the time of writing, some 15 years later, this same land was supporting about 1000 head of sheep and 200 to 300 head of cattle, with pasturage the year around. Fenced and cross fenced, with many acres in field crops, this ranch was a prosperous and profitable one, and all because, as Mr. McCarty testified, "some friend suggested that the only thing my land was fit for was to support goats." Many other such fact stories as this could be cited.

And, oddly enough, the case is also being reversed now on many a range throughout the districts where the Angora goat has won a place for itself. For not only are goat growers putting cattle on their ranges, but cattle men are adding goats for the same reason. Many instances can be found of this evidence that the modern cattle man is dropping prejudice in favor of production. When he sees the effect of goats on the range, he is no longer averse to improving his cattle feed by this means. Goats eat little grass and other feed which cattle relish, and they rapidly increase this class of feed on any range they occupy or share with other stock. Especially are they of value in clearing out the lower part of the brush and making space for weeds and grasses to grow. Ranges in Southern California, occupied for only the past three or four years by goats, can be pointed out as evidence that goats also cause the spread of bur clover, Dakota Vetch and other such valuable stock feeds to a very large degree.

On General Farms

In addition to the man who can put goats on tracts of worthless land and the stock man who is able to add bands to his range, another class of farmer has a place for meat and mohair goats. This is the diversified farmer, or even the fruit rancher or other specialist, who has certain portions of idle land attached to his farm. With proper fencing, or by herding in conjunction with other land conveniently situated, such farmers can find much profit in either Angoras or milch goats.

In planning for a small band in such a situation, it is to be remembered that, while the Angora is much superior as a meat animal, mohair in small lots is not much of a source of income. However, this problem might easily be worked out on a co-operative basis in a community where several neighbors wished to raise goats for meat. They could herd small bands together, pool the mohair and thus bring in a welcome addition to their incomes with little additional labor and expense.

If pure-bred stock is to be raised or long mohair is to be grown, the Angora can be made very profitable even in small bands. The demand for good stock continues year after year to be in excess of the supply, and prices are good. The long mohair branch of the business has been developed by some breeders to the degree where the hair from a single animal frequently brings in hundreds of dollars. The breeding of this type of animal is also a profitable undertaking. These special lines, of course, require much personal attention and experience.

Such is also the case with milch goats. These can be handled in small bands or even individually and are suited for the grower with restricted space. Profits, as compared to those received from ordinary Angoras, are much larger per individual, but the work of caring for them is proportionately more difficult. Milch goat growing, whether for the production of stock or as a milk or cheese industry, demands much more personal attention and detailed care than the handling of range goats.

This does not mean that no milch goat is a range goat, however. Milch goat stock can be very successfully raised on range. In fact, young stock, which is range raised, has a real advantage, according to many experienced growers, in the resultant thrift and hardiness of the animals. But, on the whole, market and other conditions usually require the raising of milch goats in a more convenient manner than that afforded by the open range.

While far more detail is involved in the raising of milch goats than the meat and mohair animals, it is a much simpler branch of the industry for the novice. Successful handling of range goats calls for both range and knowledge of range stock. For a start in the milch goat business, nothing more is necessary than a back lot, willingness to give attention to detail and a love of animals. In fact, the love of animals is the only absolute requirement, for with it the others will develop. There are always empty lots in every city, and even an apartment house dweller need not be denied entrance into the milch goat industry where the desire is sufficiently strong, as is evidenced by instances in Southern California cities.

Another distinct advantage for the beginner with milch goats is that common stock can be made the basis of a high class producing strain, while for mohair production the introduction of alien blood is fatal. The persistence of straight hairs for many generations in grade mohair stock is ruinous to mohair quality and the price it brings the producer.

Milch goats, on the other hand, seem actually improved from at least the standpoint of hardiness by the infusion of common blood, such as that of the Mexican goat, so common here. In a very few years, by the use of a pure-bred buck of some good milch strain, a band of excellent milch goats can be bred up from very indifferent foundation stock. This is a very encouraging feature for those wishing a start in this business, especially in view of the very high prices being secured now for pure-bred stock, a condition which promises to continue for some years, because of a nationally growing demand.

In getting into this business, the beginner has also the aid of co-operation among older breeders, who have rapidly organized this industry within the past few years. Information concerning stock, and also all the problems which constantly need solution can, through this means, be secured by the bewildered new stock grower, as, for instance, one who finds himself possessed some fine morning of three lively young newcomers in his goatery, when, according to his plans and preparations, there should have been but one. And, of course, this is only the first of his troubles. But, thanks to the get-together spirit of his predecessors, he finds himself able calmly to meet such emergencies.

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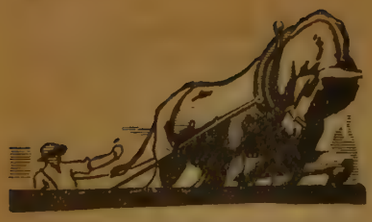

Care of Horses

By Albert J. Mason

THE prevalent sentiment among horsemen is that it is better to house and feed the work horse during the summer than to attempt to maintain the animals on grass with a scant supply of grain and hay.

Grass is not a desirable material to serve as the basis of the work-horse ration. The practice of turning work animals out on Sundays to eat grass, to which they are unaccustomed, is a prolific source of colic and other digestive disorders. Generally the animals would be better off in a cool, darkened stable, where they could be carried on half rations of grain during idleness.

Where work horses which are fed full allowance of grain are turned out to graze each night they usually are in poor condition for work next day, as the extra feed they have consumed merely tends to increase the tax on their digestive capacity. However, where the stables are hot and ill ventilated it is preferable to expose the horses to digestive troubles on the pastures rather than to attempt to carry them in the barns.

Feet Need Watching

The feet of the work animals should be examined frequently during the summer, in order that accumulations of dirt may be removed. A few moments devoted to scraping out the hoofs each morning and evening will add to the comfort of the beasts, as often such foreign materials as nails or stones lodge in the wall or sole of the foot or are collected in the clefts of the frog or between the bars and the frog. If the hoofs are excessively dry or brittle, they should be softened with some good oil or hoof ointment, and if they are ragged or tend to split, they should be rasped on the edges and trimmed until smooth.

It is advisable to clip horses when the weather warms up in the spring and heavy work begins. When clipped, they work much better, and they do not become chilled after work from having thoroughly soaked the heavy coat of winter hair with perspiration. Horses that are clipped as soon as heavy spring work begins should be blanketed at night.

The average farm work horse, as we all know, is fed in a more or less hap-hazzard manner, with little regard to scientific calculations. Why the horse was neglected while balanced rations were being used for cattle, hogs and other animals remains a mystery. One of the best guides for the man who desires to feed his horses intelligently is the new Farmers' Bulletin No. 1030, which may be obtained from the Division of Publications, U. S. D. A., Washington, D. C. It is possible to govern a horse's diet according to its size and the work it performs, and thus greatly to lengthen its life and decrease the probability of attacks of disease.

A. N. Wheelock of Riverside, remarked during the recent horticultural convention that he had read with interest of the millions of dollars represented by the agricultural interests gathered there. He recalled, however, how as a boy, following the harrow across dusty New England fields, he had been very close to the soil but not to those millions.

Feeding Beans to Hogs and Cows

Following the stagnation of the bean market, much interest has been manifested in feeding beans, especially cull grades, to hogs. Here is a Sacramento County rancher's account of his experiments, in which not only hogs but also dairy cows figured.

FROM our experiments we have concluded that beans are excellent as feed for growing pigs, mature hogs and milch cows. We have been feeding culls and bean screenings (or offal from the cleaners) since January, and unless the market "opens up," intend to dispose of our good Lady Washingtons in the same manner. The beans lying in a warehouse are costing money every day, while those we have been feeding have brought us at least 4 cents a pound.

Unless the stock is starved and forced to eat them, the animals will not take kindly to raw beans. We cook ours over an open fire, out-of-doors, for about five hours, and when they are nearly done salt them. We find that they are eaten much more readily when salted.

We did not give the little pigs many beans before weaning, but since weaning, they have been fed almost exclusively on the beans. And they have grown so fast and are in such fine condition that we intend to continue feeding beans until they reach the finishing period. Then hard grain will be added to their ration. The beans must be fed in small quantities at first and gradually increased.

The three-months-old pigs are getting a ration of one-half pound of beans a head a day. When the beans are cooked, they weigh three times as much as in the dry state. The ration consists, in reality therefore, of one and one-half pounds, in addition to the water in which they are cooked. The young pigs, fed in this way, have made an average gain of four and one-half pounds a week. Their flesh appears to be very solid. Some hog-raisers prefer to keep the feed constantly before the animals, but our experience is that it is better to feed the beans three times a day, the night feeding being the heaviest.

We have found that the nursing sow keeps up her flesh much more easily when fed beans. The sows will eat an average of six pounds of the cooked beans per day. The little pigs, we have found, do very well on the bean-made milk, showing rapid gains.

A number of hog-raisers in California are buying up damaged beans for feed. Many Sacramento Valley farmers who have not sold their beans are feeding them on a small scale at the present time. Some of them feed the beans in the raw state, but experience has taught us that the cooked bean is not only more readily eaten, but also more assimilable.

It has been reported a number of times that many bean growers have thrown their beans into the Sacramento River, rather than pay storage on them month after month. Of these crops, probably 50 per cent has been damaged by rain. The damaged beans have proved to be as good hog feed as those which were not damaged.

Feeding Milch Cows

As for milch cows, beans have proved to be an excellent concentrate, when fed at milking time. We feed about a gallon of well-cooked and salted beans a day to each cow. When there is an abundance of green feed, the beans alone, as a concentrate, are sufficient, but when there is no green feed, the beans should be alternated with bran or some other concentrate. When beans are fed with no other concentrate during the dry season of the year, we find that the butter is inclined to be crumbly and hard. In our experience in feeding beans to cows, we find that they must be thoroughly cooked and salted in order to be eaten up clean, and to bring about an improvement in the milk flow.—W. Temple.

Useful Information About Milk Strainers

ALTHOUGH emphasizing the fact that clean milk depends primarily on sanitary methods of production, dairy specialists report that milk strainers as commonly used also have a direct bearing on the quality of commercial milk. Certain kinds of strainers cause milk to appear clean, but fail to remove all impurities. Of all the milk filters in common use, only two—absorbent cotton and filter cloth—are reasonably efficient in actually improving the commercial quality of milk. Even these filters must be kept clean and changed frequently.

According to reports from about 40,000 farms, wire-gauze strainers are in more general use than any other kind, but studies with the microscope show plainly that the meshes are much too large to hold back any but the very coarse impurities. One thickness of cheesecloth or other cotton cloth is only slightly more effective than a wire-gauze strainer, but when the cloth is folded to about eight thicknesses its ability to remove dirt in milk increases somewhat, although still inefficient as compared to absorbent cotton or filter cloth.

Filter cloth, a specially made cotton cloth, smooth on one side and "fuzzy" on the other, was found to be reasonably effective. This cloth can be obtained from leading dairy supply houses. The milk should be poured on the fuzzy side, the fibers of which stand up like the nap of a carpet and remove all but a small percentage of the solid impurities. The most effective strainer of all, however, has a layer of absorbent cotton placed between two thicknesses of cheesecloth.

At best, straining milk is a practice that makes milk appear clean and therefore more easily salable, but no strainer removes either the bacteria, the objectionable flavors, or the very fine dirt. As a consequence, straining milk fails to improve its wholesomeness to any noticeable degree. Clean milk is best obtained by sanitary methods which prevent, so far as possible, the entrance of dirt into the milk. This can best be accomplished by having clean cows in a clean stable and milking with clean hands into sterilized small-top pails.

Horse Sense

By Tulare Farmer

BIG HORSES do not always require big collars. From a recent personal experience, I have concluded that many teams are worked with collars much too loose for them, simply because the horses are very large and appear to have heavier necks than is actually the case.

I borrowed, for their keep, a team of Clydesdales that would weigh, in good flesh, 1700 pounds. The shoulders of both horses were in bad shape, and their collars were very loose. The animals were thin and run down from hard work, it is true, but it was apparent that the collars had been purchased on the basis of the appearance of the animals rather than a careful fit.

We secured two smaller collars and put in sweat-pads. Still the shoulders gave trouble. Then we turned the team out on pasture for several weeks' rest. At the end of this period, we harnessed them up, using collars belonging to a small team, weighing about 1100 pounds. Although there is no comparison in size between these two teams, the smaller collars gave perfect satisfaction.

We made no further change with one of the animals, but since the other retained a hard lump where the sore had been, we finally adopted a medium-size collar, fitted with a sweat pad, which is cut short to clear the sore spot. In addition we wrap a grain-sack around the collar. I firmly believe that the big team originally reached this deplorable condition simply because the owner thought that since they were enormous animals, he could scarcely buy collars too large for them.

Do your horses always have access to salt? A badly run-down horse, especially if it has been eating considerable green feed, usually displays a greedy appetite for salt, while a sleek, fat animal, accustomed to a concentrated dry ration, eats, as a rule, very little. Experienced horsemen agree that all horses remain in much better condition and in firmer flesh when given regularly enough salt for their requirements. If salt is withheld they are likely to overeat of it when it is finally placed before them.

Sweat pads are both a convenience and a crime. They are undoubtedly responsible for many bad shoulders. Perhaps our horses would be better off if they had never been invented. Their owners attempt to use ill-fitting collars by inserting the pads, when a correctly-fitted, smooth-leather collar would be much more satisfactory. Pads, when used, should always be scraped off and dried at night, and should not be applied to lame shoulders when wet or hard. A neighbor of mine apparently has solved the collar problem. He sews oil-cloth carefully over the pad, so that it always presents a smooth, hard surface to the skin. He believes that, in addition to affording more comfort, the oil cloth will greatly increase the wearing qualities of the pad.

Silas Evans, president of Occidental College, Los Angeles, believes that the high cost of living is due to an over-production of non-producers.

Judging the Legs of a Drafter

UNDOUBTEDLY the most famous horse trader of all times was David Harum, who got the better of "the Deacon" and consequently became immortal.

It remains to be discovered whether David was the better judge of horses or of human nature, for the successful trader undoubtedly needs a knowledge of both. If David had been asked to diagram and explain the points which made up a good drafter, he might have found himself in deep water. This work has been done for modern traders, however, and we present herewith diagrams and explanations as prepared for the Percheron society. The feet and legs are the foundation upon which rests to a great extent the ability of the animal to perform work. While conformation of body and physical condition are important, the wise buyer and breeder will notice first whether the animal has "a good understanding."

It is desirable to have the front legs set squarely under the body. Both should not appear to come from the same point in a too-narrow body; neither, however, should they seem to be "clapped on" to the outside of an already too wide front.

The forelegs bear more weight than the hind legs. Their function is largely that of supporting the body and lessening the jar when the feet come in contact with the ground, rather than propulsion. Strength, combined with a long, easy stride is indicated by the long, sloping shoulder, heavily and smoothly muscled. The arm should be relatively short, heavily muscled and carried well forward, and the forearm should be long and heavily muscled.

Good Knees Important

The knees should be of good size, broad, deep, straight, clean, and well supported from below. Standing too open at the knees, knock-kneed, knee-sprung, and calf-kneed are terms applied to some of the more important defective deviations in the set of the knees. Such defects decrease strength, sure-footedness, and speed. Defects of this sort do not improve with age and length of service but grow worse.

The cannons should be short and set with the tendons well set back. A "tied-in" condition of the tendons below the knees is a serious defect. No draft horse ever had too much clean, flat quality bone below his knees or hocks. Long, slim cannons generally go with a "weed." Weediness has no place in any kind of horse and least of all in the draft horse.

Clean, smooth and well-supported fetlocks of good size are desirable. Draft horse pasterns should be of moderate length with plenty of slope and good quality. Proper length and slope of pasterns go with spring and sure-footed action; these qualities act as "shock-absorbers" and give the horse good control of his feet. The opposite condition means a short, hard stride and a short period of usefulness.

Properly placed feet which are medium in size, rather circular in shape, wide and deep at the heels, stand wear best. Flat feet; i. e., those with wide, flaring hoof walls and lacking in depth, are not of long avail in withstanding the punishment hard-footing metes out to them. Furthermore, to add to the trouble with this type of foot, the horn is generally shelly. The high, narrow-heeled foot is subject to contraction.

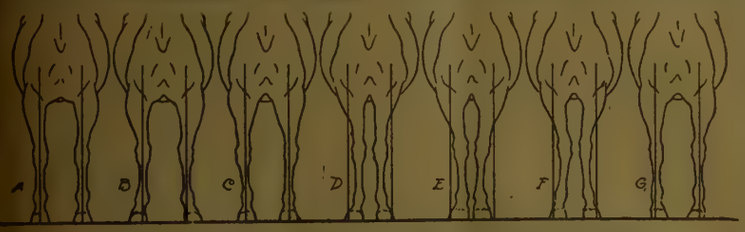

FIG. A—IDEAL CONFORMATION OF FORELEGS
B, C, D, E, F and G—Faults, any one of which may prove serious

Feet toeing either in or out cause bad action and hence a waste of energy. Users of draft horses on the streets have more trouble with horses going wrong in their front feet than in any other place. Very frequently forefeet prove the limiting factors. The qualities that make feet wear on the streets add usefulness to horses worked on farms even though the test may not be nearly so severe.

The Hind Legs

Propulsion is the chief function of the hind legs, which support less weight than the forelegs and also suffer less from concussion. It is important that the legs be properly set and the joints be strong so that the heavy muscles of the hind quarters may exert their power to best advantage. The diagram (R) shows a perpendicular line dropped from the point of the buttock, dividing back of hock and cannon and foot in lateral halves and meeting the ground a short distance back of the heel. In practice, horses are found to have freer action when the points of the hocks are turned in a bit and the toes of the hind feet out, thus giving more freedom for movement at the stifles. Hind legs thus placed insure a horse in going with his hocks well together and well under him. "Out-bowed" hocks do not permit of proper delivery of power. Horses with hocks of this sort have a hard job in standing on "slippery" going, and the condition becomes worse with service.

The hock is an exceedingly important center of movement. The pull of the extensor muscles which propel the body is concentrated here. The hocks should combine good size with clean-cut quality and should be wide, deep, point prominent, and have plenty of support below. Sickle-hocks, hocks too straight, cow hocks,

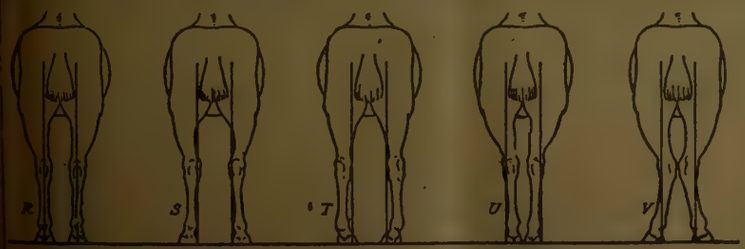

FIG. R ILLUSTRATES DESIRABLE CHARACTERISTICS
S, T, U and V illustrate faults for which the buyer should look carefully

(Continued on Page 28)

TEXAS OIL STOCKS

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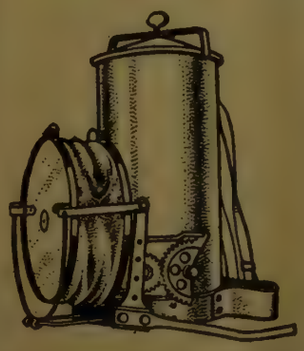

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Napier Fodder as a Stock Food

By H. C. Davis.

THE importance of Napier fodder (Elephant grass) as a stock feed of exceptionally high palatability and nutritive value, as frequently pointed out by California authorities, is being constantly emphasized by reliable reports from widely scattered localities. Not only from letters telling of private feeding tests on various farms and ranches, but also from such sources as University and Government Experiment Farms, is this testimony coming in. A bulletin on this subject, just issued by the University of Florida, and written by Prof. J. B. Thompson, an eminent forage crop specialist, contains much corroborative evidence.

It was through an appropriation from a State cattlemen's association that Professor Thompson, who has had extensive experience with tropical crops, was enabled to carry through his forage crop investigations at the University of Florida. Since his research work was undertaken, with a view to finding plants of practical value to stockmen, his conclusions are of especial interest.

Superior to Other Feeds

Professor Thompson declares that: "In nutritive value and palatability, Napier grass is probably not excelled by any similar non-leguminous feed. It seems especially suited as a green feed for dairy animals, as its high content of protein and its decidedly palatable nature render it valuable in a milk-producing ration. Two comparative tables of analyses, compiled at the University of Florida, showing the relative nutritive value of Napier fodder as compared with other soiling and hay crops, uphold these statements. The analyses follow.

Extremely Palatable

With its enormously greater production and far simpler requirements, the advantages of Elephant grass, as compared with many older and better known forage crops, are obvious. Since it is a perennial and can be planted as a permanent stand, it can even be compared very favorably for many locations with that famous crop which has for so long been held as peerless—alfalfa. Moreover, it will thrive under conditions where alfalfa will not.

Many stock men are now giving it as their opinion that in Napier fodder they have found the ideal all-around stock feed. Both as a soiling crop and as hay, numerous instances of gratifying experience with it in various parts of this country can be given. Many reliable farmers declare that their animals will pick out this palatable hay from barley, oat and even alfalfa hay and eat every scrap of it eagerly before touching the old favorites. All kinds of stock like it as green feed from the first taste in practically every case. For small stock and for dairy animals, it seems especially adapted for use as a soiling crop, as it furnishes a continuous supply of succulent feed in the late summer and fall months when ordinarily little green feed can be obtained.

Rhodes Grass is an excellent grass where the climate is not too cold. It stands considerable drouth but failed to live through the past winter in Antelope Valley. It produces abundantly where it can be irrigated, in warm locations. It is a summer grass. It stools out freely and sends out runners, which take root and grow from each joint, wherever it can. It also bears seed abundantly. Imperial Valley growers and others are enthusiastic about it.

ABOVE

Two-year-old clump of Napier grass grown in city of Los Angeles.

BELOW

Heads with shattered seeds. Attempts to grow large plantings from seeds have met with little success.

TABLE NO 1. Comparing Composition of Green Napier Grass With Other Forage Crops.

Nutrients	Green Feed From — 1 Corn Per Cent	1 Sorghum Per Cent	2 Japanese Cane Per Cent	3 Para Grass Per Cent	3 Napier Grass Per Cent
Water	78.1	75.1	76.40	72.8	65.84
Ash	1.3	1.4	.80	1.4	1.68
Protein	1.9	1.5	.45	1.7	2.58
Carbohydrates	13.0	14.0	20.40	20.4	14.[illegible]
Fat	.6	1.0	.60	.5	.[illegible]
Fiber	5.2	7.0	6.55	8.2	13.24

1. Taken from Henry and Morrison's Feeds and Feeding.
2. Taken from Florida Experiment Station Bulletin No 105 and converted to terms of green feed containing about normal percent of water
3. From Agricultural Gazette of New South Wales, Vol XXVIII, page 457.

TABLE NO 2 Comparing Composition of Napier With Other Hays.

Nutrients	Cured Hay, Per Cent — 1 Timothy	1 Alfalfa	2 Rhodes Grass	3 Napier Grass
Water	11.6	[illegible]	9.8	9.25
Ash	4.9	8.6	7.6	9.83
Protein	6.2	19.9	7.1	11.34
Carbohydrates	45.0	[illegible]	44.6	41.06
Fat	2.5	2.1	1.4	2.15
Fiber	29.9	28.3	29.2	26.29

1. Taken from Henry and Morrison's Feeds and Feeding.
2. Annual Report Hawaiian Experiment Station. 1909, page 58-59.
3. Analysis made in laboratories of the State Chemist, Tallahassee Fla

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Promising New Forage Plants

A Los Angeles experimenter writes of some of the alien grasses he has naturalized, and predicts great possibilities for a number of them.

STOCKMEN are continually on the lookout for new and satisfactory forage crops. I know this to be true because I was for many years in the cattle business in California. I realize that we must have not only a number of high-yielding summer grasses, but winter grasses as well. Green feed the year 'round is the best insurance against loss and heavy expense.

With my past experiences and the needs of Southwestern livestock raisers in mind, I have for the past three years conducted extensive experiments with a number of new and unusual forage plants, seed and cuttings which I have ordered from many foreign producers, after reading all available literature on the subject from all parts of the world.

I have not considered annuals, because it is too expensive to plant a new crop every year, but a number of excellent perennials have come to light. Some produce better in the summer months in California, and some in the winter months. Of all the grasses with which I have experimented, I have come to the conclusion that Napier Grass (Napier Fodder), or Elephant Grass, also called "Australian Giant Grass," heads the list. It is the largest producer, most palatable, most tender, richest in feeding value, and least injurious to stock.

A Glimpse of the Experiment Plot

Where the various grasses described in this article were tried out. Here is shown one of the first plantings of Napier Grass, which, when fully matured, converted the back yard into a veritable jungle.

Interesting Sorghums

However, there are other good perennial grasses. Among the most promising that I have tried out is a perennial sorghum, native of Northern Nigeria (Africa), and another, native of Paraguay, South America. Both of these lived through the past severe winter. They are similar to Sudan Grass, but are much larger, and being perennials have a great advantage over this widely-grown plant.

Guinea Grass is a perennial and a native of South America. It belongs to the millet family, but does not look at all like millet. It has a seed head more like that of Sudan Grass, but much smaller. It grew about four feet high in my experimental plot last summer and produced an abundant crop of seed, which comes up readily—even "volunteers." I planted one row of each of two kinds of Guinea Grass; both were supposed to be perennials. The one row lived and stayed green through the winter nicely and the other one did not live through. I like the perennial Guinea Grass very much, and believe that it holds great promise as a stock feed.

Para Grass, a native of Mexico, is a good plant for grazing purposes. It does not bear seed in this country but grows from the joint. It sends out runners on top of the ground and takes root from each joint wherever it can. I tried it in Antelope Valley. It lived through the long, hot, dry summer, without irrigation and also lived through the winter months, which was more than I expected it would do, as it is supposed to be a wet-land grass. It is very hardy but always tender.

Tall Meadow Fescue has proved to be a good winter and summer grass, according to my experience with it in a small way. It bears seed abundantly. It went to seed three times last summer. It grows three to four feet high and stools out like "bunch grass."

Tall Meadow Oat Grass is a good winter grass and an evergreen where the summers are not too dry. It is closely related to the common oat. It is widely naturalized and well adapted to a great variety of soils. On sandy land it grows two to three feet high and on heavier soils, four to five feet high. I planted it in Antelope Valley in May, 1918, which was entirely too late, but it started off nicely and grew until the coming of hot, dry weather, which checked its growth and dried it up. I thought it was dead, but with the winter rains, it came up fresh and green from the heart of the plant and produced a nice growth during the winter months, making good grazing for stock. It seems to withstand the cold about the same as alfilarea. October or November is the best time to plant.

Turf or Winter Oats is a good winter grass. It does not resemble oats until it heads out; it looks rather more like rye. It seems to withstand severe frosts. It can be winter-grazed, and afterwards will grow and head out in the spring, as is the case with rye.

Phalaris Stenoptera is an excellent winter grass but does not grow in the summer under drouth conditions.

Paspalum Dilatatum is a good wet-land grass, but endures considerable drouth. It makes a good sod the second year and grows about four feet high. It can be cut two or three times in a season, where irrigation is possible, but did not produce much growth under Antelope Valley conditions, where I tried it in a small way without irrigation. It should prove an excellent pasture grass along the coast.—Eugene Spencer.

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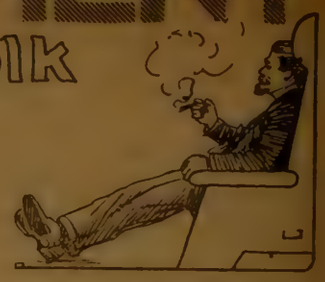
EDITORIAL DEPARTMENT

Cheerful Chat Among Farm Folk



ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things: looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

The Federal Quarantine

CERTAIN interests are engaged in thorough and active propaganda to bring about a repeal of the new Federal Quarantine Act, technically known as Plant Quarantine No. 37. Investigation shows that the opposition to this measure centers principally about a small group of importers engaged in bringing into this country fancy and ornamental nursery stock.

Leaders in California horticulture, including nurserymen as well as officials and growers, regard this legislation as the most progressive and beneficial measure ever taken to protect our country from foreign pests. A great many of our most destructive pests have been imported. Danger lurks in every new shipment from abroad. This important piece of legislation not only should stand but also should be rigidly enforced.

Here Is High Finance

Are you keeping cost accounts? Do you know what each department of your establishment is making—or losing? Or are you like the darkey who bought a pig for $6, fed him $10 worth of grain and sold him for $16?

"How much did you make on your pig?" inquired his neighbor.

"Didn't zackly make nothin," parried Zeke, "but Ah had de use ob him all wintah foh t' eat de swill."

Uncle Wiseacre Says:

Spite gener'ly leads to respite.

Enthusiasm an' accomplishment gener'ly parades t'gether.

Now which is th' greater enemy of society—th' sheep-killin' dog 'er th' time-killin' man?

A peculiar fact is thet th' man who talks all th' time about th' narrow-mindedness of other people, is usually one who is glued to an office-chair an' does most of his dealin' with his fellow-man over th' telephone.

Th' undertakin' business is one thet kaint be too crowded, fer if we all undertake t' bury our differences, our petty jealousies an' the' hatchet, this would be a much pleasanter world t' live in.

Speakin' of family argyments, if th' wife is right ye might as well admit it, an' if she is wrong she never will admit it. Which only goes t' show thet wrong kin never triumph over right. They's only one sure thing about it, an' thet is whichever way it goes, ye're in wrong! Ain't thet right?

Is Farm Life Always Healthful?

TOO much emphasis is placed upon the supposed state of bounding good health enjoyed by all who have their abode in the country. Merely living out of doors cannot and does not insure and certify a condition of physical well being. True, the countryman, unless afflicted with constitutional disease, is the more able to overcome the effects of wrong living, but the city dweller who does not break the laws of nature, and who gives proper attention to his physical well being, is more likely to pass a rigid physical examination than a countryman of less precise habits. Likewise the city wife and mother, if less burdened than her country sister, may live longer and in better health.

Many back-to-the-soil enthusiasts were startled by the published figures of the physicians examining draft men and volunteers during the recent mobilization. The proportion of farm lads having serious physical defects was in many districts larger than that of city-bred boys!

These facts are not given in an effort to discount the delights and advantages of work and play in God's out-of-doors. It is a fact, too well known for comment, that no greater contentment nor reward exists on earth than can be won by a life, well lived, upon the soil.

But we have been too prone to neglect in rural districts the sanitary and preventive measures taken as a matter of course in the cities. The crying need of physical education and examination in rural schools is especially before the nation at this time. Did you know that while the death rate in the cities had decreased from 22.1 per cent to 17.2 per cent during the past 100 years, there has been in this time, practically no decrease in the rate in country districts? The administration of the schools has an important bearing on the death rate. California is far ahead of most States in the advancement of rural education, but there is room for improvement in many districts.

Conducted on an equal plane with regard to sanitary precautions and respect for nature's laws, country life is certain to result in greater health and vigor than city life. But figures do not lie, and we cannot deceive ourselves by chanting ancient beliefs as applied to present conditions.

The member of a farm family who works all day until sorely fatigued, even though that work be out of doors, and then sleeps in a stuffy room, with window tightly shut, is inviting disease even more than the city worker whose employment is sedentary, but who has regard for proper exercise and ample ventilation, particularly of the sleeping room. The city school child, whose teeth and eyes are properly examined and cared for, and whose morals are safeguarded, has a better chance for success than a country lad who is neglected in these respects, is forced to overwork when in the formative period, and lacks instruction on the fundamentals of health and happiness.

With education come the reforms that overcome the handicaps of country life, and we are now in the midst of a revolution in this respect. It is undeed a mistake to believe that merely living and working on a farm creates a resistance which will offset all abuses. But sane living is even more to be advocated in the country, for there is found its greatest reward, and there may the seeker after light discover both physical and spiritual well being.

Passing Thoughts by Uncle Wiseacre

SOME folks measures manhood by money. As fer me, I'll pick th' feller thet is worshiped by dogs an' children. I differs, too, with a ribbon-clerk I know, who says "speed" is th' only thing thet will get a feller anywhere these days. Th' biggest an' most successful man I know ain't never cut no swath through th' atmosphere, but strange t' say, he reached th' top by passin' guys thet was always in a hurry.

Jake Enger is th' laziest man I ever met. He spends enough time figurin' out labor-savin' devices, t' do twice th' work thet he saves. One time I seen him writin' a letter at th' hotel an' I sez t' him: "Jake, thet must be an important epistle yer writin'; ye been studyin' on it fer twenty minutes." An' he sez, "No, 'taint so important, Uncle Wiseacre, but I wuz jest schemin' how t' make all the I's come under th' spots on th' paper, so I wouldn't have t' dot 'em."

They said thet it wasn't a farmers' war, an' yet they are now usin' th' poison gas t' kill insects, th' dynamite t' break up hard-pan, th' steel helmets t' hold potted plants, th' airplanes t' scout fer cotton boll-weevil, th' nitrates fer fertilizer, th' army mules fer plowin', th' trucks fer rural express, th' tanks t' do field work, an' th' wartime officeholders t' hound th' food-profiteering farmers, some o' which fer th' first time in their lives has made enough money t' pay their doctor bills.

Farm Bureau Progress

EVERY agriculturist should rejoice that the continuation of the great farm bureau movement is assured. The State, through the passage of Senate Bill 556, recently signed by Governor Stephens, has provided for its share in the expense, while the Agricultural Appropriation Bill, now before Congress, and apparently certain of ratification, assures us of the continued co-operation of the United States Department of Agriculture in this vital work.

We hope that the time will come when the farmers of America will build, upon this strong framework, the national organization which is certain to grow out of the present co-operative movement. A body of delegates, representing all the agricultural industries and all sections of the country, could be maintained at Washington in a National headquarters building such as has already been proposed, and could work in conjunction with the Department, just as the present farm bureau members work in conjunction with the county agents and extension workers of the department. This, it seems to us, would be the most logical manner in which to bring about close union and national co-operation between all members of every branch of agriculture, and it would certainly be the most satisfactory method of dealing directly with the Administration.

But such a tremendous undertaking cannot be brought about over night by the stentorian utterances of inspired organizers. It must come as a logical, natural, sane development, through the efforts of the producers themselves, as exemplified by the splendid local co-operative organizations already existing throughout California and the nation at large. And these organizations would not be absorbed by, but merely affiliated with, parent associations, and the proposed national headquarters at Washington.

Farm Bureau Papers

It must be extremely annoying, not to say embarrassing, for the publisher of any local newspaper to be called upon to compete, in his solicitation of advertising, with a farm bureau monthly. An investigation of almost any case in point will show that the newspaper has given freely of space in co-operating with the farm bureau and the farm adviser, and is always willing to help along the movement. The more logical means of reaching the members, it seems to us, would be for the county agent and his staff to conduct a department in the columns of an established local paper selected by the members and thus to do away with this useless competition. We believe that the farm bureau paper which cannot be made self-supporting without advertising should be discontinued.

Jas. C. Knollin
Editor

Weed Control

(Continued from Page 7)

cent of the crop producing capacity has been destroyed by weeds." South Dakota: "The farms in Central and Southern Iowa which, if free from such weeds as horse nettle, would bring from $150 to $200, being infested as they are, cannot be sold." U. S. Department of Agriculture: "A weed new to America made its appearance a few years ago in the wheat-raising regions of the Northwest and has already caused damage to the estimated amount of several millions of dollars. Spreading rapidly to new territory and becoming more destructive in the region already infested, it threatens serious consequences unless prompt measures are taken to subdue it."

Something Must Be Done

The weed referred to is the Russian thistle, now invading so many parts of California. It is one of the serious pests of grain crops and is a considerable handicap to grain farmers in certain sections. A farm infested with noxious weeds is high at any price. The presence of such weeds as have been mentioned, of morning lory or of dodder, renders land undesirable for farming purposes. Land is of value according to its productive capacity, and, if it requires an annual expense of 20 per cent because of weeds, its productive power is seriously crippled.

We should unite in reducing the weed nuisance. Every land owner should co-operate, for he has not only his own land to consider, but also his neighbor's. A weed is a public nuisance, just as much so as any other offensive pest, and pressure should be brought to bear on negligent farmers and orchardists for the protection of those who are keeping pests under control.

The county horticultural commissioner is empowered by law to hire clean-up work done when the property owners fail to comply with the orders to do it themselves. The expense is then a lien on the property. This method should be used only as a last resort. It should be the desire and the pride of every farmer to increase the value of his land and his crops by the elimination of waste.

In the next issue of Orchard and Farm I shall outline some of the most advanced and successful methods of mitigating the weed menace and eradicating the common varieties.

The "Green" Hand

The Boss—"Well, where have you been? Why did it take you all morning to go out in the pasture and get a pair of double-trees?"

His Nibs—"Did the best I could, Sir, working by myself. Took me quite a while to find two that I could handle, and then I had to chop them down and load them on the wagon."

News item: Man arrested for stealing FOOD from a restaurant but discharged with judge's blessing when he proved that he had taken nothing but a stack of lettuce sandwiches.

Tractor Use, Profit, and Safety

TRUE progress is always slow. The change to mechanical power for farm work has been twelve years in the making, but today there are few American farmers who have not given serious thought to the question of tractorizing their farms.

For the benefit of those who may not yet be convinced that the tractor is a useful, profitable farm power machine, we present again a few of the opinions of farmers who are using the International Kerosene Tractor. Some of these are about essential features, and some mention only conveniences, but taking them altogether, almost any farmer will feel, after reading them, that the International 8-16 is a tractor worth considering.

"My International supplies a power flexible enough to handle the large amount of seedbed, harvest and other work without delay."

"It can be used for continuous work if emergency demands it."

"It produces power at much lower cost than horses, and it can be used for both drawbar and belt work."

"I like the steady way it works. Without seeming to hurry, it gets through a surprising amount of hard work."

"It does a lot of good work at a cost so low I could hardly believe it. You did a wonderful thing for Eastern farmers when you made this tractor to run on kerosene."

"It is not bothered by flies, nor by bumble bees. It works steadily on the hottest days."

"Requires very little care. When the day's work is done, I run the tractor tail first into an inexpensive shed. In the morning, I fill the fuel tank and the oiler, look into the radiator, and am ready for another day's work."

These opinions are typical. They prove at least that the International 8-16 is a useful, profitable tractor. Now consider just one other thought for a minute.

This tractor is the outgrowth of twelve years of active tractor experience by a company that has sold all kinds of farm machines for many years. The beginning of this business goes back to 1831—almost 88 years ago. Does it not seem reasonable that with this experience we should offer you a tractor that you could use with profit, especially when we expect to come back some day and sell you more of the machines listed in this advertisement?

If you are now convinced that the International 8-16 is a useful, profitable tractor on some farms, and that you don't have to be an expert to buy one safely, write us to find out what this tractor will do for you, on your farm. A post card will bring you full information.

The Full Line of International Harvester Quality Machines

Grain Harvesting Machines
Binders, Push Binders, Headers, Rice Binders, Harvester-Threshers, Reapers, Shockers, Threshers

Tillage Implements
Disk Harrows, Cultivators, Tractor Harrows, Spring-Tooth Harrows, Peg-Tooth Harrows, Orchard Harrows

Planting & Seeding Machines
Corn Planters, Corn Drills, Grain Drills, Broadcast Seeders, Alfalfa & Grass Seed Drills, Fertilizer & Lime Sowers

Haying Machines
Mowers, Tedders, Side Delivery Rakes, Loaders (All Types), Rakes, Combination Side Rakes and Tedders, Sweep Rakes, Stackers, Combination Sweep Rakes and Stackers, Baling Presses, Bunchers

Belt Machines
Ensilage Cutters, Huskers and Shredders, Corn Shellers, Threshers, Hay Presses, Stone Burr Mills

Belt Machines—Cont.
Cream Separators, Feed Grinders

Power Machines
Kerosene Engines, Gasoline Engines, Kerosene Tractors, Motor Trucks, Motor Cultivators

Corn Machines
Planters, Drills, Cultivators, Motor Cultivators, Binders, Pickers, Ensilage Cutters, Shellers, Huskers and Shredders

Dairy Equipment
Cream Separators (Hand), Cream Separators (Belted), Kerosene Engines, Gasoline Engines, Motor Trucks

Other Farm Equipment
Manure Spreaders, Straw Spreading Attach., Farm Wagons, Farm Trucks, Stalk Cutters, Knife Grinders, Tractor Hitches, Binder Twine

International Harvester Company of America
(Incorporated)
Billings, Mont. Crawford, Neb. Denver, Colo. Helena, Mont. Los Angeles, Cal. Portland, Ore. Salt Lake City, Utah San Francisco, Cal. Spokane, Wash.

Are the Farmers Really Coining Money?

JOHN SMITH of Average County in the State of Anywhere made a great deal of money on potatoes one year. His neighbors planted the same kind of potatoes the following season and also made money. They discovered that their soil and climate were especially adapted to potato growing. Then the growers met together and formed a marketing association. They brought prosperity to each other and to that section.

In another part of the country Fred Jones experimented with cantaloupes and within five years his county became nationally famous for the quality of the melons shipped by its specialist farmers.

Similar occurrences in various parts of the country, together with an occasional "killing" by some individual farmer or group of farmers, under especially favorable conditions, has given rise to the idea that all food producers are now simply rolling in wealth. Let John Smith and Fred Jones, after years of struggling, finally make good and lay aside a little fortune, and the story is enlarged upon by the metropolitan press until the impression exists that every man in the country who is growing things is merely counting the dollars as they flow in. And therefore the readers of these inflated reports naturally argue the farmers must be directly responsible for all the evils of the day, including high food prices. Apparently there is on foot a definite propaganda designed to libel the food producers and to create outraged feeling against them.

But the only just law is the law of averages. Communities cannot be judged by single individuals. An industry cannot be analyzed according to the accomplishments of a few of those engaged in it.

As a matter of fact, farmers throughout the United States are making less money than the lowest paid skilled mechanic. A statement was made in the city of Baltimore a few days ago by Dean Davenport, a leading Illinois economist, to the effect that the average farmer of the nation received for his work during 1918 (the year of inflated commodity prices) the enormous sum of 30 cents an hour!

Cows Love Salt and Must Have It

Experiments Prove That Without It Their Vitality Suffers and Their Milk Runs Low

Simplest Method of Supplying Needed Amount Is to Salt Hay While Stacking or Baling

(From Pacific Rural Press.)

Salt is such a common thing that the very important part it plays in the health and milk yield of the dairy herd is perhaps not realized by many farmers.

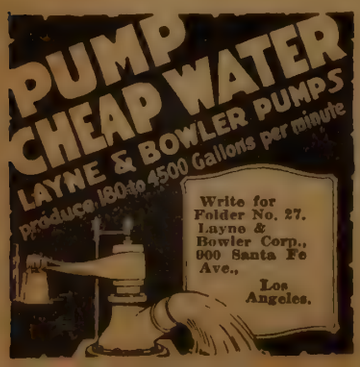
Experiments conducted at the Wisconsin State Experiment Station prove conclusively that salt should be supplied to dairy cows unless the ration furnishes a sufficiency thereof. It is calculated that the minimum quantity in the food to keep a cow of 1000 pounds live weight in flourishing health is that which is equivalent to ¾ oz. of salt per day, and that a cow in milk needs as much more as will restore the proportion removed in the milk, namely, a little over ½ oz. of salt for every 20 pounds of milk.

The conclusions from these experiments are briefly as follows:

"In every case the cows exhibited an abnormal appetite for salt after having been deprived of it for 2 or 3 weeks, but in no case did the health of the animal, as shown by the general appearance, the live weight, or the yield of milk, appear to be affected until a much longer time had elapsed. This period of immunity varied with individual cows from less than a month to more than a year. There was finally reached a condition of low vitality in which a sudden and complete breakdown occurred. This stage was marked by loss of appetite, a generally haggard appearance, lusterless eyes, a rough coat, and a very rapid decline in both live weight and yield of milk. If salt was supplied at this period recovery was rapid. In one case potassium chlorid was given instead of common salt (sodium chlorid). Considerable of the potassium salt was eaten, though cows ordinarily refuse to touch it, and recovery followed as quickly as when common salt was supplied—evidence that not the lack of the sodium but the lack of chlorin was responsible for the troubles. The breakdown due to the lack of salt usually occurred after calving, when the milk flow was heavy, and generally the cows giving the largest amount of milk were the first to show distress."

Farmers who salt their hay when stacking or baling have found the plan an excellent and profitable one. The salt more than pays for itself in the increased weight of the hay, and besides improving the feed, it removes the danger of musting by checking the growth of molds when the moisture content of the hay is high. This is particularly true of alfalfa hay.

Twenty pounds of salt to each ton of hay should be used, which should be sprinkled on by hand as each three feet of the hay is stacked—Advertisement.



Irrigation With Corrugation

Although California leads the other Western States in the up-to-dateness of the water-distributing equipment used on its irrigated ranches, improvement in the method of handling the water after it leaves the supply-pipes or main ditches is a live topic of the day. The more expensive the distributing system, the more necessary is it to make the most economical use of the water commensurate with thorough soaking of the ground. The corrugation method has may advantages, especially in large, open fields.

IN THE June issue of Orchard and Farm was published an account of the corrugation method of irrigation, now being employed with considerable success by many Imperial Valley ranchers. Here is a description of a home-made marking machine, used in ridging the ground for handling the water by this method:

The corrugating machine is simple in construction and can be built by any "handy-man." The runners for making the corrugations are made from four-by-fours, or four-by-sixes, six feet long, strapped on the bottom with iron. The front end is beveled at an angle of about 60 degrees and faced with a four-inch plow-point, projecting about three-quarters of an inch below the bottom of the runner.

The runners are braced in position at from 24 to 30 inches apart, center to center, and the entire framework floored with two-by-sixes, overlapped. A two-by-twelve in front is sloped at an angle of 30 degrees and braced with angle irons, to keep dirt from flowing on the front end of the machine.

The corrugator may be used with or without a tongue and truck, but a truck makes the machine more easily handled and the tongue makes it steadier. The object of the floor is to float off the beds between the corrugations. The floor should project beyond the outside runner half the width between the runners to insure proper floating.

This machine, when run over the ground, should leave a smooth, flat bed between the furrows. The best results have been obtained by the use of corrugators with the runners set from 24 to 28 inches from center to center, the 28-inch size being the more popular.

In regard to the size of the entire contrivance, there seems to be no definite rule to work by. The depth is always 6 feet, but the width may be extended as desired. The usual width is 12 or 13 feet, allowing room for five runners. However one rancher is using a corrugator more than 20 feet wide, for which a tractor furnishes the power. A 13-foot corrugator makes an easy load for three horses.

J. N. Renfrew of Niland has an adjustable corrugator which allows the runners to be moved from side to side in a series of peg-holes; but he does not advocate this method of construction.

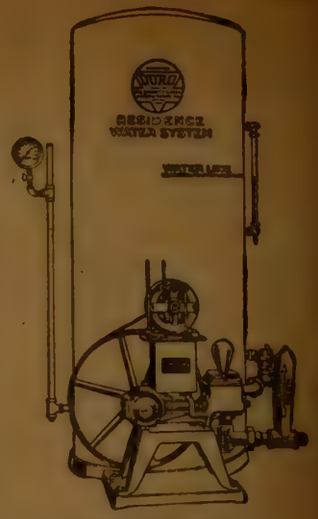
Good Fall Required

Renfrew and others recommend the corrugated method only where the fall is greater than 6 feet per mile, and from this up to 10 and 14 feet per mile. The corrugations should run the way of the heavy fall. In flooding where the fall is so great it was found that the land washed badly. This difficulty was eliminated with the corrugated method.

The advantages of the corrugated system are that it permits of a very thorough and uniform irrigation and eliminates baking of the soil. With these advantages it is much easier to secure a stand of alfalfa or grain than by flooding, especially in the case of land which does not produce any crop on hard soils. Young grain and alfalfa irrigated in this way show a more rapid growth and vigorous development probably because the soil does not bake and pack. In starting alfalfa, the second irrigation in many parts of California is a critical period in securing a stand. The use of this "runnel" system of irrigating (as it is sometimes called) entirely eliminates the danger of losing the stand because of the necessity of irrigating too soon. When the stand is secured and the alfalfa well grown the land may be irrigated by flooding if desired.—Wm. L. Trewin.

The Home-Made Marker in Action

The above drawing and plans give a good idea of the construction of the machines used in Imperial Valley. Little difficulty is experienced in operating the machine in loose soil, but very stout construction is necessary in working hard ground or established hayfields. (Note—Don't censure the artist for hitching the team direct to the machine with log-chains, and without the use of doubletree or clevis. He is a good chap and he means well.—Ed.)



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THE all-round water system for household use. Pumps either hard or soft water at a very low cost and furnishes it under pressure to any part of the house just like city water service.

"DURO" Residence Water Systems will supply the home, grounds, water the garden, stock, etc.

Strong, simple, quiet running and entirely automatic in operation.

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—which shows just how DURO lightens labor and brings city conveniences to country homes. Mailed free on request.

California Hydraulic Engineering & Supply Co.

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We have some good territory for live dealers.

NITRATE OF SODA

It puts back into the soil what the trees take out — Nitrogen. Helps young trees to grow thrifty and strong; keeps old trees from losing their productiveness.

CHEAPEST AND BEST

Cheapest because it supplies most available Nitrogen at the least cost. Best because it is taken up by the trees immediately after application and leaves no injurious residue.

Clean, odorless and easy to handle. Direct from Chili in original bags.

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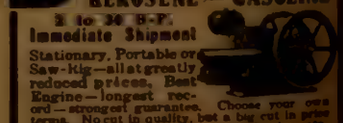

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Sunflowers

How to Control Garden Pests

By Justin Nutt

Snails and Slugs

I never could get rid of the snails in my garden 'til I tamed a few of the little critters and bred up a family of racers. Yes, sir, by selection and trainin' I increased the speed of my pet snails to nine miles per hour. Now, when my garden is invaded, I simply turn one of my racers loose and he starts off across the country at a terrific pace. The wild snails is so peeved by this display that they all start in to race him and it ain't long 'til everyone of 'em is clean out of breath and dies f'm exhaustion.

Grub Worms

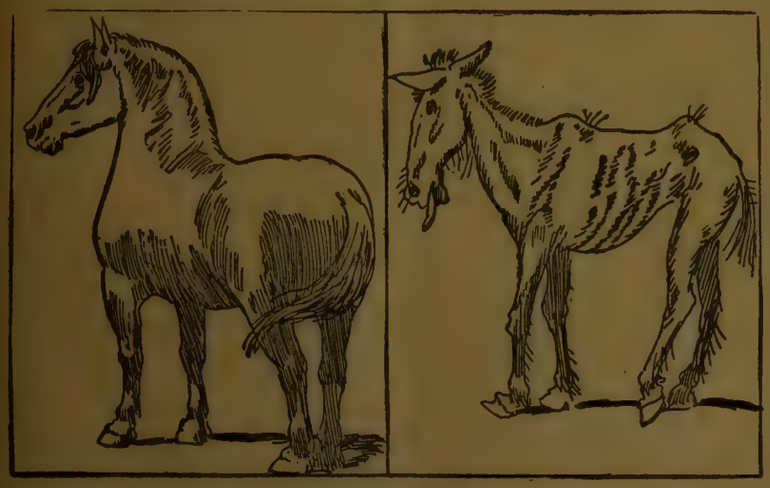
The remedy for grub worms is simple. Jest take away their grub and you have nothin' left but common worms, which ain't harmful.

Grasshoppers

I always have a trellis of hops around my garden for the grasshoppers. In their efforts to hop over the hops, they hop so high that eventually every one of 'em is killed by fallin' such a great distance back to th' ground. Another way to control the hoppers is to catch 'em and paint their legs with collodian. As soon as this dries, their legs become stiff and they have t' stand still in one position. Then it ain't long 'til the birds eat 'em up. This is particularly recommended fer ladies who object t' killin' outright th' enemies of their flower gardens, and may be applied t' any insect. Thus th' bugs is easily disposed of, an' the' birds treated t' a meat course which keeps their minds off'n th' tomatoes, fruit and freshly-planted corn.

Uncle Wiseacre Says:

"I used to think Monday was the busiest day of the week, but since I have knowed Ben Gonnadooit, I've come to th' conclusion that the very busiest day is 'tomorrow.' He's always puttin' somethin' off, and when he ain't puttin' off, he's puttin' on. Sometimes he puts on an injured air, an' sometimes he puts on a pretense at industry; but it's very seldom he puts on a clean shirt onless his wife makes him."



WE SHOULD SAY THE SALESMAN WAS A HYPNOTIST!

Our artist has a ranch. He bought a horse the other day. Now he thinks that the man who sold it to him ought to be handling oil stock or used automobiles, instead of wasting his talents on horses. The artist depicts on the left how the animal looked to him as he was buying it. On the right is shown its appearance on a cold, gray dawn of the morning after.

The Foolish Farm Adviser

Solomon Smith tackles a problem of finance and offers some sound, though simple, advice.

"I have a young orchard," said Jefferson Prine.
"It's doing quite well and my prospects are fine.
"But I want some advice as to how to proceed;
"It's not only prospects, but cash that I need.

"It's in its third year; I must wait till the fifth
"To get any income you see, Mr. Smith.
"Expenses increase but no money comes in,
"And I can't run my business without any tin.

"I've tried to raise money, Sir, all over town,
"But my friends were all broke and the banks turned me down.
"Now what shall I do to hold on to my grove,
"Buy gas for my flivver and coal for my stove?"

"You've tried to raise cash and you're spirit is grand,"
Said Smith, "but you're wasting your valuable land.
"We can bank on one thing; your expenses won't stop;
"The help that you need is a cash inter-crop.

"You have ten idle acres between your tree rows;
"The cash you must raise is the money that grows
"From the soil when it's watered and tended with care.
"If you dig you will find that the money is there.

"The question, of course, is what crop you shall raise,
"And there's one I can mention that usually pays.
"You want some 'long green'; then you simply can't fail
"If you'll set out some plants, and just raise your own KALE!"

—Justin Nutt.

The FARMER says=
"for stumping genuine GIANT has no equal"

From recent letters of ten farmers who have used Giant Powders for Stumping we make these extracts:
"1. Your Giant Farm Powders shoot the roots. 2. They have wide breaking power and less bad gases than others. 3. I get the same excellent results from them every time. 4. They are always uniform. 5. I used eleven tons and wouldn't have any other make. 6. I want to sell a lot of other powder that I have because Giant does the work much better. 7. Genuine Giant can't be equalled. 8. I don't have to use so much powder when I blast with Giant. 9. You know what we need for stumping. 10. I save money by using Giant Powders."

Write today for our free book, "Better Farming With Giant Farm Powders." It tells how to save money and get better results in stumping, ditching, tree-planting, etc.

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"Everything for Blasting"
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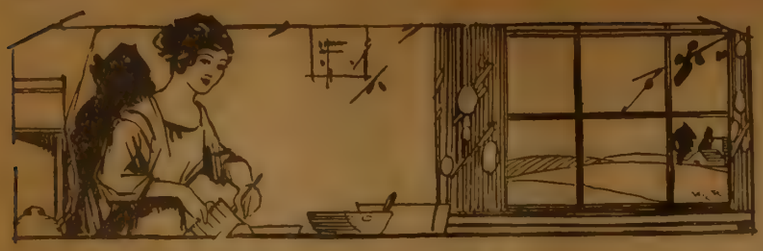
"no "holes" in it

The Gasoline of Quality

Red Crown's uniform chain of boiling points gives easy starting, quick and smooth acceleration, high power, long mileage. Mixtures have "holes" in the power chain. Look for the Red Crown sign before you fill.

STANDARD OIL COMPANY
(California)



Helpful Hints for Housewives

Edited by Isabel Sinclair

DETERMINED that my house plants should not become dry while we were away on our summer vacation, I devised the following plan to keep them moist while we were away:

I took a strip of heavy flannel and placed the center of it next to the soil in the pots, and between the stems when possible. The ends of the flannel on each side hung in water, which was contained in two quart jars. It seems a ridiculously simple device; yet upon our return the plants were in fine condition, the soil having the proper moisture.

Before leaving one should always water all plants thoroughly. Ferns should be placed, pot and all, in a tub of water for an hour or more so that they will become thoroughly saturated. If ferns are soaked in this way they will not require another

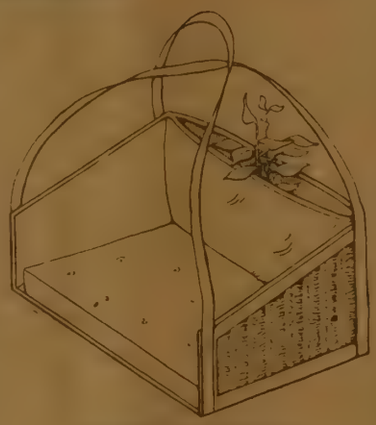
drop of water for a week or ten days. They should not have water too often, yet should be soaked so thoroughly that the soil is moist at all times.

House plants should be kept both warm and moist, but need fresh air. Often when one is away from home, the plants are kept shut up in the house without a breath of fresh air. Leave a window or two open just a "crack" while you are gone. When you are at home, the goings and comings, the opening and shutting of doors and windows gives the plants all of the fresh air they need, except for an occasional outside airing on the sunny side of the house. —Helen R. Temple.

APRON FOR TOOLS

A Bit of Duck

In brown (khaki) or blue may be made into a very serviceable little apron for work in the garden or with the ornamentals. Once made, it will become indispensable. Strength and simplicity are more desirable than fancy work and artistic patterns in



GARDEN KNEELING PAD

A Real Convenience

That may easily be constructed from an old basket of light wooden box. With a pad to protect the knees and a pocket for trowel, shears or other accessories, it will find an important place in the heart of the lover of growing things, and receive daily use.

Sewing Machine Don'ts

Longer life of the machine and greater satisfaction for the owner are sure to result if the "stitcher" is given the benefit of a few minutes' attention at frequent intervals.

Don't forget to oil the sewing machine frequently. The treadle and

The Tragic Day

By JUNE FRANCIS DALE

Silly? Yes, and Mother's tears
Soon are laughed away.
Naught can stay the march of years;
Is Baby not at play?

Ah no, the baby days are passed;
And Time's swift cycle whirls.
Of course she knew they could not last,
But Baby's—lost—his curls!

pitman should be oiled in their bearings almost as often as the working parts above the table.

Don't allow the machine to stand uncovered when not in use, as it collects dust and lint. The working parts below the cloth plate should be dusted and lint removed frequently with a small camel's hair brush. The parts above the cloth plate should be wiped often with cheese cloth.

Don't run the machine while it is threaded without a piece of material under the foot, as this causes the thread to knot around the bobbin and makes a big, ugly, bunch of thread on the underside of the work when stitching is begun. There is often a tendency on the part of the operator to stitch several inches after the end of the seam has been reached. This is a bad practice.

Don't pull the material while it is being stitched, as this causes a stretched, tight, ugly stitch and very often bends or breaks the needle. The feed will take care of this unassisted and will push the material through as fast as the machine can take care of it.—Beryl Dixon.

SPERRY

-and such Bis

BISCUITS so light and crisp and flaky that they'll gladden the hearts of your men-folk!

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You know what to expect of Sperry Drifted Snow Flour: it eliminates guess-work. it's always uniform —always dependable; and its quality never varies. Whether it be biscuits or bread—muffins or doughnuts—cake or pie—or the hundred and one other things that flour is used for—you are always sure of uniform baking results when you use Sperry Drifted Snow Flour.

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to 15 minutes.

BISCUITS

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and ½ cup of
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inch thick and
l greased pan.
to 20 minutes.

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Ask for Sperry Drifted Snow Flour at the store where you do your trading—and see that you get it!

D

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How to Bake a Perfect Cake

"MY CAKE was a failure!" How often have you heard this expression? At present prices of ingredients a real tragedy is involved, for a cake is truly a luxury. For this reason the utmost care should be taken both in the method of preparation and in the selection of materials. Good flour is absolutely essential, if the best results are to be obtained. And if butter is not used, the shortening also must be carefully chosen. The best results and flavor will always be obtained with butter, but owing to the present high cost, substitutes which give satisfactory results are being used. Both the mixing and baking of cake require skill and judgment. The baking however, calls for more study and care than the mixing, for no matter how well one has put the cake batter together, if the oven is not right, the cake may be a failure.

There are two classes of cakes: one containing butter or other shortening, and one (composed of sponge cakes) in which butter is omitted. Here are simple, yet comprehensive directions, including the very latest scientific discoveries, which if followed carefully will insure success with cakes. We will discuss particularly cakes in which shortening is used.

Pans should be prepared and oven heated before mixing the cake batter. Care must be used in measuring, all measurements being level. There are two ways to add the shortening; for inexpensive cakes containing a small quantity of shortening, the fat is melted and added to the batter after the cake is all mixed. For the better class of cakes, where one-half cup or more of shortening is used, the shortening is beaten to a cream, or until smooth and waxy.

How to Mix the Cake

This can easily be accomplished if the mixing bowl is rinsed with hot water and wiped dry before shortening is placed in it. Add sugar gradually to the creamed shortening and continue to beat until mixture resembles whipped cream. Separate the eggs, beating yolks until thick and lemon colored, and the whites until stiff. Add the beaten yolks to the creamed butter and sugar mixture. Add the flour, sifted with the baking powder and milk alternately, beating well. Flavor and fold in the stiffly-beaten egg whites.

Beating before adding eggs increases firmness. The more the cake is beaten before the egg whites are added, the firmer will be its texture. Separating and beating the eggs gives a light, fluffy cake. The eggs can be added to the creamed sugar and shortening mixture one at a time, unbeaten, but beating each egg vigorously when adding to the batter will produce a cake which is moist and finely grained, and one which keeps in good condition for some time.

Directions for Baking

Cakes should be baked as soon as mixed. Much depends upon the proper baking, and the best way to secure satisfactory results is to "time" the cake and divide the baking into quarters. In the first quarter the mixture should rise in the pan. In the second quarter it should continue to rise and brown in spots. In the third quarter the top should be uniformly browned. In the last quarter the cake should shrink from the pan, when it should be "done."

If in doubt as to whether the cake should be taken from the oven, test it by touching lightly in the center. If baked, the mixture will spring back, but if not quite cooked it will hold the impress of your finger. This rule for timing applies to all cakes, whether layer or loaf, or where a slow or medium oven is used.

The Time Required

The time for baking will vary a little for different ovens, but the average time for a medium-sized layer cake is from fifteen to twenty minutes. Loaf cakes three inches thick will require about forty minutes; sheet cakes and cup cakes about twenty-five minutes. Cakes baked in a brick-shaped pan will require an hour or longer. A moderate oven will give the best results for nearly all cakes.

If the batter rises in a cone in the center you are using too hot an oven, and a crust has formed before the mixture has had time to rise. The oven door may be opened to watch the cake, but this must be done carefully. Do not open the door wide enough for the cold air to rush in, and close the door carefully in order to avoid jarring the oven.

Tried and Tested Recipes

Note: All measurements are level. Flour is sifted once before measuring. A half-pint measuring cup is used.

LAYER CAKE

½ cup shortening
1 1-3 cups sugar
3 eggs
2 cups flour sifted with
2 teaspoons of baking powder
½ cup of milk or water
1 teaspoon each of vanilla and lemon extract.

Cream shortening well or until it can be beaten with a spoon; add sugar gradually; continue to cream. Separate the whites and yolks of the eggs. Beat yolks until thick and lemon colored; add to creamed butter and sugar; then add flour and liquid alternately, fold in the well-beaten whites of eggs and flavoring. Bake in three well-greased layer pans in a moderate oven.

WALNUT LOAF CAKE

Follow above formula, adding one-half cup of finely-chopped walnuts to the cake batter before folding in the beaten white of eggs. Bake in a greased loaf-cake pan about forty-five minutes in a very moderate oven.

QUICK CAKE

2 eggs
1 cup sugar
2 cups flour
2 teaspoons baking powder
½ cup milk or water
1-3 cup melted shortening
1 teaspoon vanilla
1 teaspoon lemon.

Sift dry ingredients; beat eggs until very light; add sugar gradually, beating with egg-beater. When creamy, add dry ingredients alternately with liquid, mixing well; add flavoring and melted shortening. Bake in two layers and put together with jelly or add ½ cup chopped walnuts to the batter and bake in well-greased muffin pans.

QUICK COFFEE CAKE

Use quick cake foundation. Pour batter into a well-greased shallow pan, sprinkle with sugar and cinnamon. Bake in a moderate oven.

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Successful farmers have long ago learned that it pays to buy good tools, implements, machinery, tractors—yes, and good automobiles. In the end they are less expensive than the "cheap" trash which did poor work and which would have had to have been replaced. The same is true with Pianos—a good, dependable Piano which will give satisfactory life-time service cannot be made today to sell now under $300. Anything offered for less is a "near" piano, made to catch the unwary *once*. It has no musical quality of tone—it gives out within a few months—it sounds tinny—the woodwork warps—the keys stick—it won't stay in tune—it is worse than no piano at all. A good, reliable dealer carries Pianos only of true musical worth—his prices are consistent and his terms of payment are so reasonable that you can buy a good piano just as easily as you can a poor one.

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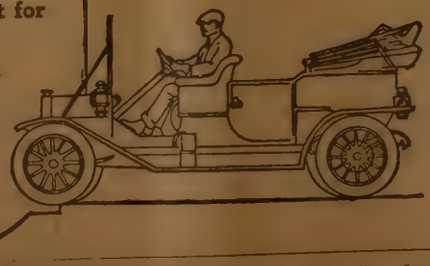

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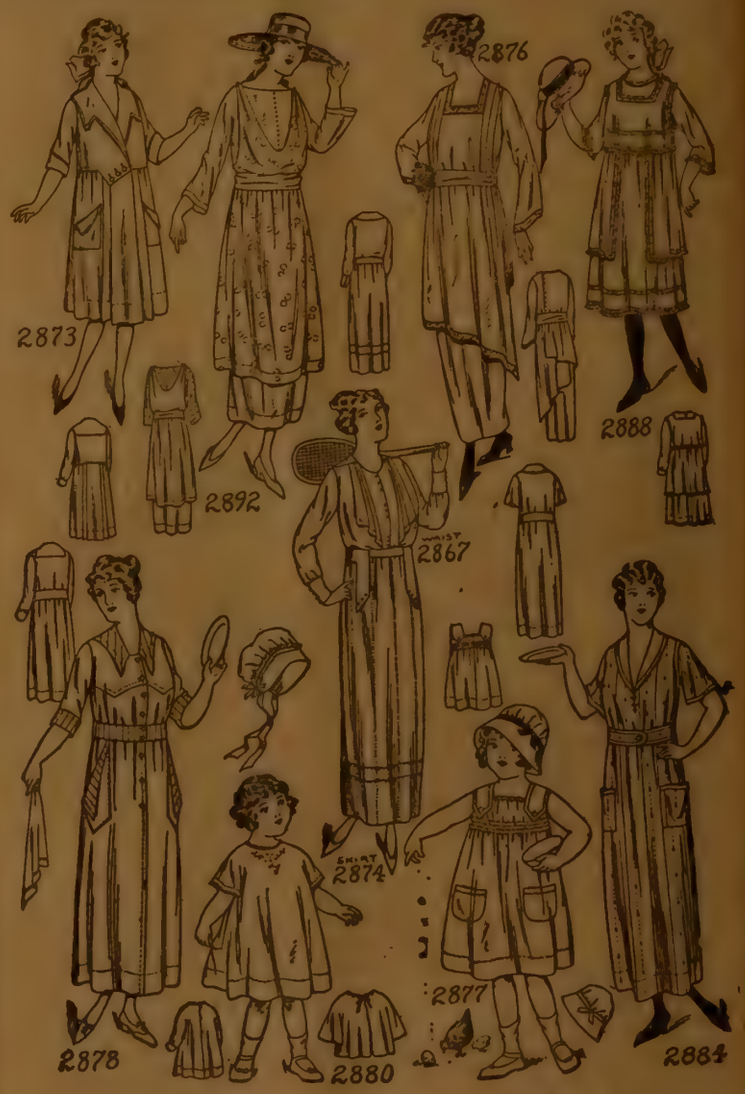
Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, "Examiner" Building, Los Angeles.



2873—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. Size 12 will require 5⅞ yards of 27-inch material. Price 10 cents.

2892—Misses' Dress

Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 6¼ yards of 44-inch material. The skirt measures about 4½ yards at its lower edge. Price 10 cents.

2876—Lady's Dress

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Size 38 requires 6⅝ yards of 36-inch material. Width of skirt at lower edge is about 1 2-3 yards. Price 10 cents.

2867-2874—Lady's Costume

Waist 2867 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 3⅛ yards of 36-inch material. Skirt 2874 is cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. Size 26 will require 6 yards of 36-inch material. Width at lower edge is about 1⅝ yard. Two separate patterns, 10 cents for each pattern.

2878—Lady's House Dress

Cut in 7 sizes: 36, 38, 40, 42, 44, 46 and 48 inches bust measure. Size 38 will require 4½ yards of 36-inch material. Width of dress at lower edge is about 2¼ yards. Price 10 cents.

2880—Child's Set

Cut in 4 sizes: 6 months, 1, 2 and 3 years. Size 2 will require of 36-inch material, 2 yards for the dress, ⅞ yard for the sack, and ½ yard for the bonnet, with ¼ yard of lining. Price 10 cents.

2888—Girl's Dress

Cut in 5 sizes: 6, 8, 10, 12 and 14 years. Size 12 will require 4⅝ yards of 44-inch material. Price 10 cents.

2877—Girl's Dress and Hat

Cut in 5 sizes: 2, 3, 4, 5 and 6 years. Size 4 will require ⅝ yard of 27-inch material for the hat, and 2⅝ yards for the dress. Price 10 cents.

2884—Lady's Apron Dress

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42, and extra large, 44-46 inches bust measure. Medium size will require 4½ yards of 36-inch material. Width at lower edge is 2⅛ yards. Price 10 cents.

Catalogue Notice

Send 10 cents in silver or stamps for our up-to-date spring and summer, 1919 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also some points for the needle, illustrating thirty simple stitches, all valuable hints for the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No..... Size.....

Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

More Light on Poultry Situation

(Continued From Page 6)

front of these yards, opening out of them, is an alfalfa field, into which the fowls are turned to get green food.

"Under my plan a house 100 feet long has a capacity of four to six hundred layers. At present I have about three hundred fowls to the house. When the mating season is over I take the males out and put them by themselves so that the market eggs will be sterile. All special matings are trapnested during the breeding season. I have thirteen special mating yards, in addition to two large houses.

How Lights Are Used

"In the two long laying houses, before described, I turn on the 25 candle-power electric lights at 4:30 in the morning, when it is not daylight at that hour; that is, during the fall and winter. The fowls get down immediately and commence scratching in the litter for grain left over from the night before. This keeps them warm and they do not take cold. They do not get enough feed in this way early in the morning to fill up and later they go to the egg mash hoppers, which are kept filled. I feed green stuff at noon. Oats and barley are sown in the yards, the fowls eating them at will.

"Nothing more is fed until 6 o'clock each evening, which is my feeding time the year around. In the late afternoon the lights are turned on again, before the fowls start for the roosts, and are left burning until 8 o'clock. The birds feed from 6 o'clock to about 7:30, which leaves them half an hour to get to their roosts before the lights are turned off at night. They get all they want to eat by the time they go to roost.

"The litter consists of mill shavings about four to five inches deep in each scratching compartment. In the front part of the house, enclosing a space about 8x12 feet, a 12-inch board stands on edge to form a scratching pen. This board extends down the center of each section. The sun shines in here in winter time and a curtain is provided to drop down for shade in summer.

"Scratch feed only is put in the litter. I use milo-maize, Egyptian corn and Kaffir corn. In the winter season we use Indian corn. The fowls fill up every morning on grain left in the litter over night, before they go to the laying mash in the hoppers."

R. S. Moseley, formerly in charge of the Cornell poultry project at East Aurora, New York, outlines the prevailing schedule of management commonly practiced there. The trials have proved so successful that practically all of the 50 poultrymen who are project members are now using lights. About 100 other poultry farms in the immediate vicinity are similarly equipped.

In one instance lights are used only from dusk until 9 o'clock in the evening. In the other plan they are employed from 5 or 6 a. m. until daylight, and from dusk until 8 p. m. Dry mash is always before the birds. From one to one and one-half quarts of scratch grain per 100 hens is fed at 7 a. m. in a clean straw litter about 8 inches deep. Between 6 and 7 p. m. 100 hens receive five to six quarts of scratch grain. Some producers use in addition, a moist mash at noontime, fed in long wooden troughs. At about 7:30 p. m. the lights are dimmed and at 8 p. m. all light is extinguished. Natural gas, kerosene lamps and lanterns, gasoline lanterns and acetylene have all been tried in that section. All seem to give equally good satisfaction provided there is enough illumination so that the birds can see sufficiently well to pick grain readily from the straw litter. Usually one 60 candle-power light is employed in a 20x20-foot pen for 100 hens.

Mr. Newell, from whose book we have previously quoted, writes of the use of electric lights in his poultry houses, as follows:

"The installation of the electric light in two poultry houses, which included the wiring, and the moving of the meter from the second story of the house to the basement, cost $30. Two sockets were placed in each poultry house, one socket in each house being used for a single lamp, and the other one being provided with a Benjamin socket.

"In the Benjamin socket, in each house, an 8 candle-power incandescent lamp was placed on one side and a 60 candle-power Tungsten lamp was installed on the other side, and in the other socket another 60 candle-power Tungsten lamp.

Nature Improved Upon

"The reason for providing Benjamin sockets was that we wanted the small light to remain burning, to

(Continued on Page 38)

Biddy Does Not Know the Difference

Between the light originating with Old Sol and that given off by man-made contrivances; at least, she is just as willing to work by one as the other. More exercise and more feed mean more eggs, and more eggs at the time when the market is highest, may mean the difference between loss and profit.

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will increase pork production approximately five-tenths pounds daily over a barley and tankage feed, yet it sells for less than half the price. Do you know of any other feed that will do this at any price?

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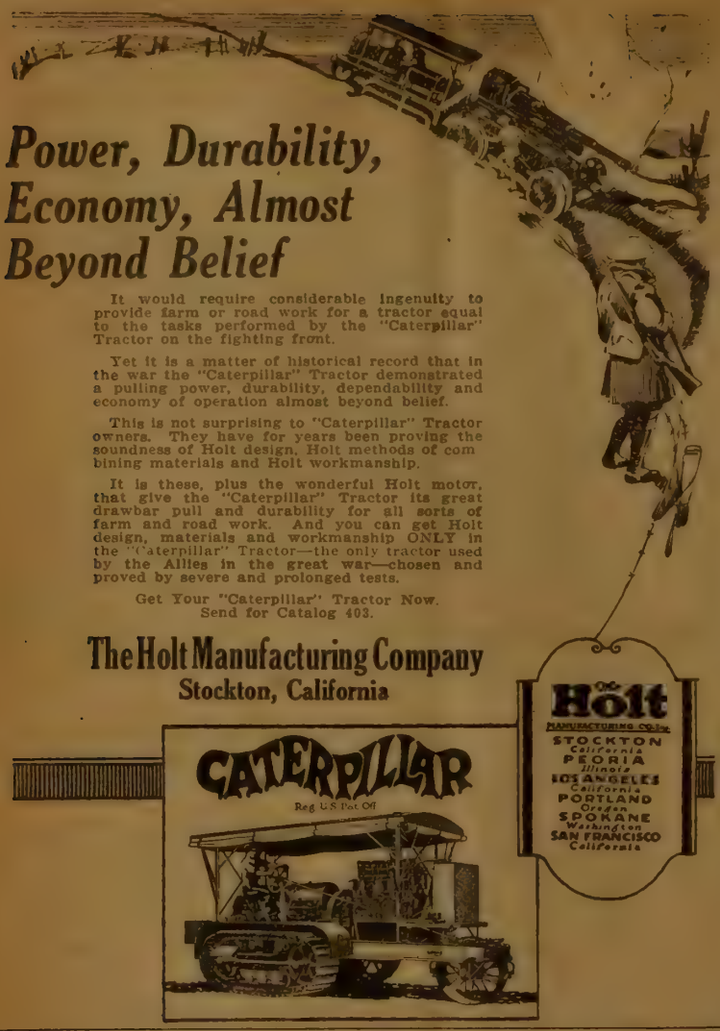

Power, Durability, Economy, Almost Beyond Belief

It would require considerable ingenuity to provide farm or road work for a tractor equal to the tasks performed by the "Caterpillar" Tractor on the fighting front.

Yet it is a matter of historical record that in the war the "Caterpillar" Tractor demonstrated a pulling power, durability, dependability and economy of operation almost beyond belief.

This is not surprising to "Caterpillar" Tractor owners. They have for years been proving the soundness of Holt design, Holt methods of combining materials and Holt workmanship.

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Send for Catalog 403.

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and has no hesitancy in recommending that every reader who is farming three acres or three thousand investigate the tractor situation thoroughly, with a view to becoming an owner as soon as possible (if not one already). There is a tractor for every farm and every purpose.

Get in touch with the dealers either individually or through their

Public Demonstrations and Exhibitions

Attendance at a TRACTOR SHOW Is a Liberal Education

Doctoring the Sick Tractor

What to Do and How to Do It

By W. W. Rainey

When old Dobbin, or Prince, or Nellie, the mare, groans in the night, or refuses to eat, or develops a bad cough, you prescribe a rest and some medicine; perhaps you call the "vet." And you do not work the patient until normal conditions are established.

But do you heed with equal solicitude your tractor's cries for help when it develops unusual symptoms and gives forth heart-rending shrieks, rattles, groans or knocks from its innermost regions? The surprising thing about tractor troubles is that 90 per cent of them are of little consequence if detected and remedied at the beginning.

Therefore I assert that proper attention and a little mechanical knowledge on the part of the owner are absolutely essential to successful tractor operation. Speaking from a knowledge born of many years' experience in all branches of the tractor game, including service and distribution work, I will say that the farmer who takes his investment seriously and determines upon the proper course for securing best results need have no hesitancy at this time in investing in a tractor of well-known make, backed by an experienced and reliable concern, and reinforced by an available supply of extra parts. Such a machine will be honestly represented to you and will accomplish the purpose for which it is designed.

Motors Misunderstood

In fact, I will say that very few of the common tractor troubles now reported by owners of standard machines are traceable to errors in design or workmanship. The real difficulty is that most of those who are uninitiated in the operation of tractors and tractor motors do not understand the working parts of the motor or magneto, and consequently cannot explain intelligently the cause of the little irregularities in operation which invariably occur.

Since the motor is all inclosed and the operator cannot see the working parts, he usually looks at it as something that is rather mysteriously constructed, and thinks that it requires a great deal of study and particular training for him to learn how the whole thing works and what to do if it does not work.

As a matter of fact, there is nothing complicated about a gasoline motor. A little study of its general principles, together with what you can learn by observation and by asking intelligent questions of those who understand tractors, will place you in a position to do most of your own service work.

In this and succeeding articles I am going to tell you of some simple and effective cures for the little diseases which will occasionally crop out in your tractor.

There is one vital point which the owner of a tractor must take into consideration, and that is the difference between the work performed by a motor in an automobile and the one in a tractor. Nearly every purchaser of a tractor is very well versed in automobile lore, and knows that if he keeps his machine filled with water, oil, gas and grease it will run for weeks or months with little adjustment. If it develops any especial mechanical difficulties he runs into the first garage and has a mechanic fix it up.

Cultivating Five Rows of Beets

Speed and power are the telling attributes of the motor-cultivator. When time is precious, it covers the ground in a remarkably short space of time. Used in conjunction with big tractors, especially on ranches too large for the economical employment of general-purpose machines, it brings about in many cases complete motorization of the farm.

Different Power Requirements

With the automobile, on ordinary roads, when you start your car and accelerate it through its different speeds up to a speed of fifteen or twenty miles an hour, you are using only about 30 per cent or less of the maximum power that your motor will develop. And yet you are putting the same proportion of strain on your gears that you would if you were pulling an extremely heavy load.

When you are running along highways with your automobile at an average speed of twenty-five miles per hour you are not using normally over 20 per cent of the power of your motor, and there is practically no strain on gears. You know that if you throw out your clutch you will coast a long distance.

With the tractor you have a different situation. Your tractor, if pulling its rated h. p. load, is working under from 85 to 95 per cent of its full rated power all day long, and if you disengage the clutch at any time you will not coast 1-32 of an inch.

Since the motor develops this great amount of power, the pressure per square inch exerted against the face of the gears of the transmission while in contact is multiplied several times as compared to the pressure to which the gears are subjected in your automobile.

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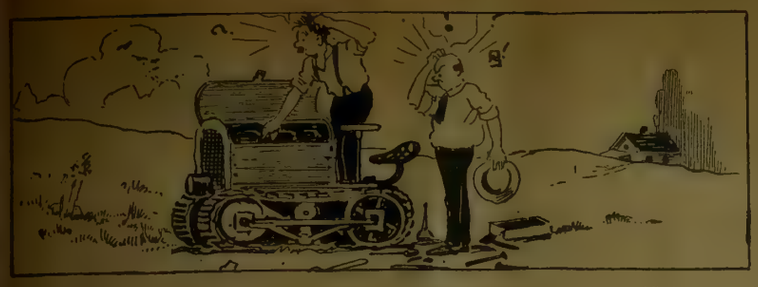

Therefore, we find the gears of the transmission much more heavily constructed, in proportion to the size of the motor, than the transmission gears in an automobile. For the same reason you will find the motor of much heavier construction, with a crankshaft of larger diameter, and this means larger connecting rod and main bearings. Larger bearings are used in order to reduce the pressure per square inch of the surfaces in contact, and this permits of easier lubrication, which in turn means less wear. In the tractor motor, also, will be found heavier cam-shaft, valve tappets and valve stems.

One important factor in successful operation is proper attention to the air cleaner or clarifier. So many new owners regard this part of the equipment as superfluous, and if it becomes disconnected or broken continue to run indefinitely before repairing it. The fact that your tractor motor is at times, and probably most of the time, running in a heavy fog of dust, makes it doubly necessary to have this little device working as near perfectly as possible at all times in order to avoid getting dust and grit into the cylinders and crankcase. If your machine is equipped with a clarifier that takes the air through water, be sure that your water is carried at the proper level, for if it is not you might as well have no air cleaner. The air cleaner is especially necessary on the low-down orchard type of tractor, with the motor set so near the ground and consequently having more opportunity to take in dust than is the case with the larger machines, where the motor is high.

Is the Tractor Perfected?

We have seen that manufacturers have given special attention to tractor design with a view to meeting the terrific demands upon its mechanism. And they have adopted every improvement pointed out by the experience of thousands of users. While new improvements will constantly be suggested, it can truthfully be said that the tractor is now an absolutely safe investment in one form or another for any man who farms.

Yet, in spite of advanced design and improved manufacturing methods, the tractor has not reached the point where it is "fool-proof." Trouble sometimes comes, and when your tractor does "quit," you cannot get to a garage with it to let the mechanic look it over. Instead, you must go after him, take him to your ranch, and then probably make a trip back to town after some repair part or tool. His services are expensive, but the time you are losing with your tractor is probably far more valuable to you than the cost of getting him to your ranch and the repairs made. In view of these facts, it will be seen that the tractor operator must understand the care and repair of the machine. This is not as complicated as it sounds. Repairing a tractor motor consists of very few operations. Nine-tenths of it involves either grinding valves, taking up the connecting rod bearings, fitting the main bearings or putting in new piston rings. It is my purpose to cover these "major operations," applicable alike to all tractors, in forthcoming articles.

On account of the dusty conditions under which your motor is always working, and the fact that no air cleaner has yet been devised that is absolutely perfect, some dust and grit will get into the crank case each day. This dust, multiplied by days, soon decreases greatly the efficiency of your lubricating oil, and consequently causes more wear on connecting rod and main bearings, pistons, rings and cylinders, thus piling up trouble for the future.

Therefore, by all means, drain out all your crank case oil regularly every few days and wash out the crank case with a little kerosene and then fill with fresh, clean oil. The old oil need not be wasted, as it makes a very good oil to use on your gears if your gears have an oiling system, or on your tracks in the case of a track-layer. If the service man who delivered your tractor suggested that you drain the oil out once a week or once every two days, by all means do so, and you will then know that you are getting good, clean lubrication, which is vitally necessary. Do not leave the oil in your tractor as you do in your car. Remember, conditions are different.

If your motor misfires on one or more cylinders it is certain to be due to one of three things: Either your ignition system is not producing a spark in the plug, or there is a dirty spark plug, or there is lack of compression in the cylinder or cylinders affected. If, upon examination, you find your spark plug clean, or, after cleaning it, you find that you are getting a good hot spark through the plug, then test the compression on the cylinder. If you find it very weak or practically gone, the difficulty may often be traced to valve trouble. The valve may stick open, or may warp and fail to seat properly, or your piston rings may be worn or broken.

First, let us consider the sticking or failure to seat properly of the valves. Many tractor motor valves are ruined every day by being run after they have ceased to operate properly. If a valve sticks up, a little kerosene squirted in around the valve stem and worked back and forth by hand will usually limber it up. But if you find the compression weak on one or two cylinders, right then is the opportune time to take off the head of the motor and grind in the valves.

A Stitch in Time

If for some reason a little carbon or other foreign element lodges in one side of the valve and holds it open, a few turns of the crankshaft will allow the hot gases generated during the explosive stroke to pass between the face of the valve and the valve seat, and then the valve will warp out of shape.

Few persons realize that just at the instant of the explosion of the gas mixture in your cylinder the heat on top on the piston and valve is from 600 to 800 degrees hotter than the melting point of the valves or the pistons themselves. A valve is cooled in the same manner as the cylinder; i. e., by the circulation of the water. Valves, in order to be cooled properly, must have a perfect contact against the valve seat at all points. The heat then radiates very rapidly through the valve seat and is absorbed by the water which is passing through the motor around the cylinder and under the seats. If your valve is seated improperly on one side it has no contact with the valve seat at this point. As a consequence, the hot gas, escaping through this small opening, causes a constant rise in the temperature of the valves, with resultant increasing damage. Frequently, when a service man goes out to "grind-in" a set of valves he has to replace one or more with new ones because of their having been so badly burned that the life is out of the steel. Therefore, when you first observe that the compression is growing weak on one or two cylinders, stop right then and grind in your valves. You will find it to be a very short job, while if burning takes place through neglect, you will probably have to buy a new valve and possibly you will even have to have a new seat cut in your motor. This requires a special "re-seating tool."

A further description of the processes of valve grinding, fitting bearings, fitting pistons and rings and care of the tractor in general will be taken up in succeeding articles.

The Toughest Steel Known for Tractor Parts

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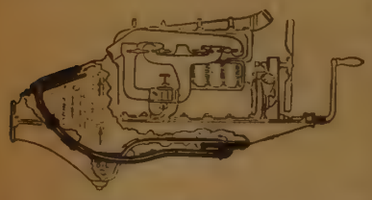
A Home Cure Given by One Who Had It

In the spring of 1898 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number, who were terribly afflicted and even bedridden with Rheumatism; and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.



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Saves oil—from one-third to one-half. Makes a cooler running engine. Affords more power. Oils all four cylinders on all grades, thus preventing scoring and heating of the front cylinders. Prevents burning out of front connecting rods, also prevents cutting of cylinder walls which makes pistons slap. Has sediment basin to catch small pieces of carbon, lint and ravellings, grit and brake lining, thus preventing clogging. No mechanical parts to wear or get out of order. Will last indefinitely. Attached outside of motor. Easy to install—only monkey wrench and screw driver needed. Pays for itself in two months. We acquired a few of these devices through the settlement of an account and are going to sell them for less than dealers' actual cost. Full details upon application. Address Orchard and Farm, Examiner Bldg., Los Angeles, Calif.

If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

SYSTEM

"in shop office and field"

A Water Tower

COMBINING a pleasing style of architecture with utility and convenience in the construction of his water tower, Fred Wourms, owner of a ranch near Oregon City, Ore., has not only improved the appearance of his place, but lightened the everyday work.

The main structure is square on its base and contains two stories beneath the eaves. From this point the roof slopes in to enclose the third story, where a pleasing style is added by the use of a dormer-window, centering each section of the roof and by the cornice work which surrounds the top. Surmounting this is a smaller structure with windows, which forms the fourth story. This is covered with a pyramid roof. Back of the tower proper is a lean-to addition containing workshop and power for operating machinery placed on the first floor of the building. The structure is painted a chocolate color with white trimmings.

The front half of the first floor comprises a milk room, provided with cream separator, churn and sink connections for thorough cleansing of all dairy utensils. The rear half, fur-

nished with a stove and tubs, makes a handy place for doing the farm laundry.

Two comfortable bedrooms, occupied by hired help, and a storage room are located on the second floor. There is also emergency bedroom space on the third floor.

Above this room, in the square structure topping the building, has been placed a large tank for storage of the farm water supply. Pure, cold spring water is forced into the tank by means of a hydraulic ram and from the tank is piped to the various farm buildings. Both the house and milk room are equipped with hot and cold water.

In the shop at the rear may be found a good work bench with all necessary tools for the numerous repair jobs constantly presented on the farm. Here, also, is the gas engine that supplies power for operating the cream separator and churn in the milk room.

Standing back and pointing with pride to his tower, Mr. Wourms argues that every farmer should give much thought to the planning of his buildings.—E. D. Rosemen, Dayton, Oregon.

True Fish Story

TEN GOLDFISH increased sufficiently in numbers in 18 months to help fertilize an orange orchard on the large Merryman ranch in Tulare County.

On this place there is a big, concrete-lined reservoir, from which water is pumped up a hill to irrigate an elevated orange grove. One spring Mr. Merryman put ten goldfish in the reservoir to keep down mosquitoes. That fall the reservoir was alive with fish, but in the annual cleaning out nothing special was done with them. The next fall it was thought that they would be good for fertilizer and fully a half ton of fish was taken out and dumped in the orchard. Since then there have been great numbers of fish to dispose of at each cleaning. This last fall, in addition to those dumped out, a number were saved alive by employes, who took them to the county seat and sold $20 worth to fanciers.

Fish for Every Farm

Every farmer using a reservoir for irrigation ought to have fish in it. A properly-stocked reservoir will make a big cut in the meat bill. Catfish are popularly used for eating purposes. Upon investigation I find that the catfish is about the only edible variety that will do well in quiet water in warm climates; like "Ben Gonnadoit" I have been intending to get some when time permitted—only this is the kind of a job that Ben apparently would have liked and attended to promptly.

Carp are frequently found in reservoirs, but are not considered very good to eat. Furthermore, they are accused of tearing down the dirt banks. I have a small "pond" on my place. A boy who used to live on the ranch had caught carp from the canal and also had brought some goldfish from the Merryman ranch and put them in this reservoir. The fish kept the water muddy, and, intending to clean the reservoir, I let it go dry last fall. A crane had been gorging himself for two months and I thought that when the water was nearly gone, there would, of course, be no fish left. Upon investigation, however, I found a barrel full. Reservoir "fish farming" may be a valuable side-line on any irrigated ranch having the proper facilities.—Tulare Farmer.

Silo for Smokehouse

The business farmer gets as much use out of his equipment as is possible. Most of us regard a silo as useful only for the storage of ensilage, but M. B. Church of the Lime Kiln Ranch in Nevada County has discovered a novel use for his 18x36 silo. He converted it into a smokehouse.

Late this winter, after the silo had been emptied, it was decided to butcher a score of hogs and smoke the meat. No smokehouse was available, but following the old rule of "Do the best you can with what you have or can get," Mr. Church hoisted his meat into the top of the silo. Here it was treated with clean, cool smoke, and the results are reported by the owner as being entirely satisfactory.

Mr. Church is now a silo-booster on more counts than one.—H. I. G., Grass Valley, Cal.

BEES PAY

Bee Keepers can obtain from the Apiary Department of the Diamond Match Co. the finest quality of Bee Keepers' Supplies at fair prices.

The Apiary Department, which is in charge of experienced Bee Keepers, is one of the largest of its kind in the United States and maintains a constant excellence of product and unsurpassed service.

Write for catalogue and, if a beginner, for Cottage Bee Keeping, which will be promptly mailed free.

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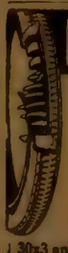
Practical Farming

This attractive volume is a veritable encyclopedia on a subject embracing the entire sphere of farming. It offers a collection of money-saving methods in agriculture, treated by specialists who have devoted a life of thought, study, experiment and practical experience to the special subjects they deal with. It is written in a style that any farmer can understand, and the volume will form a priceless guide for every-day reference.

This volume consists of over 500 pages, handsomely bound in cloth, size 8½ inches long, 6½ inches wide, richly illustrated on good book paper, 200 line drawings and half-tones, with feeding chart in colors.

The book will be mailed postpaid, including one year's subscription (new or renewal), for $1.00, or three years at $1.50. If after receiving Practical Farming and Gardening you find it not just as advertised and you are not thoroughly convinced it is a wonderful bargain, return it at our expense and we will cheerfully refund your money.

Address ORCHARD AND FARM,
Examiner Building, Los Angeles, Cal.



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Can't Puncture
Can't Blow Out

Piers of live, elastic rubber built about one inch apart inside the casing and vulcanized or welded to it take the place of an inner tube. Nothing can happen but wear.

30x3 and 30x3½ sizes only—Ford Sizes. More than 50,000 cars equipped with them in 6 years.

Big Money in becoming our exclusive dealer in your county. Tire experience unnecessary. Write today for terms.

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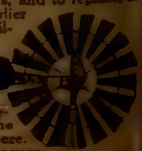
THE SELF-OILING WINDMILL

has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load.



We make Gasoline Engines, Pumps, Tanks, Water Supply Goods and Steel Frame Saws.

Write AERMOTOR CO., 2500 Twelfth St., Chicago

Repairing a Shovel

MANY an old fork, shovel, hoe, rake or other small tool has been thrown away when it could easily have been repaired in the ranch shop. To repair a grain scoop or square shovel which has become worn or battered on the edge, first mark a straight line an inch or so away from the edge (according to its condition). Then, laying the shovel on a piece of soft flat steel on the anvil, cut to the line with cold chisel and hammer, not attempting, however, to cut through. Merely make good deep nicks in the shovel. The strip may then be broken off with the hammer at the edge of the anvil and straightened by hammering on top of the anvil. Finally, file the edge carefully. A few minutes' work may thus make the shovel "do" for another season.

Loading Loose Dirt

If you have occasion to haul large quantities of dirt, why not borrow an idea of the contractors? Construct a "tunnel," build a rough bridge over it and drive the wagons under the bridge. They may then be loaded by means of scrapers. If you use mules you may not find it advisable to have a trap-door in the bridge, but a team of gentle horses will sidestep a good-sized hole and you can dump the scrapers directly into the wagons through the hole in the floor of the bridge.

The Versatile Truck

Frequently a motor truck may be used in an emergency to do some sort of field work. One Oregon rancher, who had occasion to do some hauling from a soft field, equipped his rear

wheels with removable "grouters" similar to those used on tractors, but made especially for the truck wheels. They consisted of pieces of angleiron, cut the correct length, and bolted together, so that when applied there was no slippage of the wheels inside the grouters. The accompanying sketch gives a good idea of the arrangement.

A Labor Saver

How much time and labor are wasted in carrying slop to the hogs? One good way to feed them is to run a pipe from the mixing barrel to the pen and pour the slop into the pipe by means of a large funnel. Very little "fall" is needed to carry rather a heavy slop a considerable distance. The pipe may be flushed out with water and kept clean

MOLINE UNIVERSAL TRACTOR

Saves 1⅓ Men and 5 Horses Per Farm

Through the most comprehensive tractor survey yet attempted, we have found by figures from Moline-Universal Tractor owners—not by guess work—that the Moline-Universal actually saves an average of one and one-third men and five horses per farm.

Over 200 farmers in 37 states from Main to California and North Dakota to Texas were closely questioned, and their farms ranged in size from 40 to 800 acres. Every one of the Moline-Universal owners whose data forms a basis for these conclusions was selected at random from our list of owners, so that these results are average—not exceptional.

That the Moline is really a Universal Tractor and fits any size farm is proven by the fact that the farms reporting ranged in size as follows: 8%, 100 acres and under; 37%, 100 acres to 200 acres; 21%, from 200 to 300 acres; 13%, from 300 to 400 acres, and 19% above 400 acres. In their report 76% agreed that they could use the Moline-Universal wherever they used horses, and 83% said they could do better work—and thereby make more money.

Owners are positive in their statement that the Moline-Universal is a good investment, and 73% of the Moline owners state that they wouldn't farm again without the Moline-Universal Tractor, while the rest say that they would dislike to go back to horses.

In reply to the question, "Can you operate and maintain the Moline-Universal Tractor for what it would cost you to keep three or four horses?" Ninety-two per cent replied "yes." Many reported they could do so for less.

Space does not permit a complete report, but surely these figures must convince farmers and business men who believe in facts instead of theory that the Moline System of Power Farming is the most economical and efficient, and this is the reason why thousands of Moline Power Farmers are making more money with less hard work. Complete report of this tractor investigation will be gladly furnished on request.

Moline Plow Company, Moline, Illinois

TIRES at WHOLESALE

Not Seconds—Fully Guaranteed

Genuine "Capitol" or the new "Rib-Skid" Beacon Tires $13.60 up. Red Tubes or "Inside Armor" $2.90 up. Write at once for full description, samples of material, and "Direct-To-You" wholesale prices on these absolutely First Quality Fully Guaranteed 5000 mile Tires, Tubes, Armor, etc. Avoid tire trouble, and save one-third your Tire expense by sending size of your tires and name of car today.

MODERN TIRE CO.
656 7th St., Racine, Wis.

FISH Salmon in brine, 100 lbs., $14.00. Shipping weight, 175 pounds. Smoked Salmon, 20 lbs., $4.00. Dried Codfish, 10 lbs., $1.75. T. A. Beard, 3322 Winslow Place, Seattle, Wash.

DRY FARMING

Every farmer in the West will be vitally interested in the following offer: By special arrangements Orchard and Farm is enabled to offer you Hardy W. Campbell's remarkable book

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Mail your order today.

ORCHARD AND FARM, Los Angeles, Cal.

A NEW CONTEST FOR HELPFUL HINTS

$136 in Cash Prizes

Our contest for contributions from readers, recently closed, winners of which are announced in this issue, was such a success that we are inaugurating a similar contest to commence at once and extend over a period of SIX MONTHS.

Write us about any time or money or labor-saving methods or scheme which has made your ranch more productive or your management more efficient. Write us about your experiments and conclusions with fruit, poultry, field crops, livestock, garden or, in fact, any branch of food production. Tell what you did and how you did it. Send photographs or diagrams if they will help to tell the story; they are not required, however. We want plain, unvarnished, straight-from-the-shoulder facts that will hold inspiration for other readers and help them to make more money and improve their living conditions.

The Prizes will be distributed as follows:

First	**$ 25**
Second	**20**
Third	**15**
Fourth	**10**
Five Prizes of (each)	**5**
Seven Prizes of (each)	**3**
Ten Prizes of (each)	**2**
Total	**$136**

You don't have to be a writer to enter this contest. Every farmer is an inventor and experimenter. Just take a few minutes to set down on paper some of the short-cuts or good ideas that you use in your everyday work and you may win a cash prize.

Write on one side of paper only, and sign name and address plainly. Any number of contributions accepted from each contestant. Articles limited to 1000 words, but the shorter the better, if you tell the whole story.

Address Editor, Orchard and Farm, Examiner Building, Los Angeles, and mark your letter "For Helpful Hints Contest."

The best contributions will be printed. All will be examined at the end of six months by a committee of competent judges, authorities on different branches of agriculture, and checks will be mailed to the winners, whose names will be announced in the issue following.

Co-operation Wins; Help the Other Fellow
Let Us All Make Orchard and Farm a Clearing House For Useful Ideas

Judging the Legs of a Drafter

(Continued from Page 13)

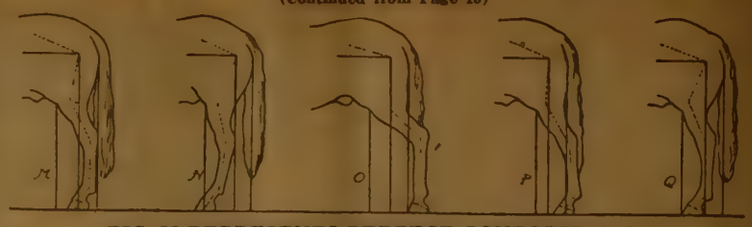

FIG. M REPRESENTS PERFECT CONFORMATION
N, O, P and Q represent common defects described in the article

and hocks bowed out are defects which result in bad action and consequently undue strain and unsoundness. The remarks made respecting fore cannons, pasterns, and feet apply very much to the hind ones.

Cocked ankles, or a tendency thereto, will depreciate the price of an otherwise good drafter from $75 to $100, no other objection being raised. Any tendency to this must be avoided in sires, and mares showing an inclination to this fault should be bred only to sires that are especially good in slope and length of hind pasterns. Horses that stand with their hind legs out behind the normal position, as in O, are liable to this, and to other unsoundness. Sires of this kind should be castrated without delay.

Correct underpinning goes far toward insuring soundness. Furthermore, the development of unsoundnesses on good limbs is generally of not nearly so serious a consequence as when it occurs on the coarse, misshapen limbs. Horse breeding at best is slow when compared with the breeding of the meat-producing animals. This makes imperative the necessity of obtaining good foundation stock.

There is a compensating factor which must always be taken into account and that is the temperament of the individual. Some "rattle-brained" horses wear out a good set of feet and legs in much shorter time than the individuals favored by nature with good brains and only moderate underpinning. While we are striving hard to breed model conformation, we ought to keep in mind that a "good head" is of inestimable value in a horse.

FIG. H SHOWS HOW FORE PARTS SHOULD APPEAR
I, J, K and L are examples of poor alignment, to be carefully avoided

Selling by Mail Has Its Advantages

MORE and more farmers are employing the ordinary sales methods used in other lines of business to dispose of their products. Have you ever considered the possibilities of a circular letter?

One small rancher that I know uses a mimeograph and keeps on hand a "live" mailing list of customers and prospects. When he finds that he is going to have an especially attractive crop of some kind of fruit or vegetables, or in fact any market produce, he solicits retail orders at fancy prices by means of these circulars, and because he has always pleased his city customers usually gets enough direct orders to dispose of all his products.

Wholesale price fluctuations have no terrors for him because he specializes on fancy products and packs them in an attractive manner, with the name of his farm prominently displayed on each container.

He began by addressing letters to a dozen friends, and they recommended his products to others until his mailing list has grown to include nearly 400 names. Usually he writes a short letter, explaining why the particular product is superior to the ordinary market stuff, and encloses an order blank. If his vegetables have been carefully treated and sprayed, or his fruit picked at just the right stage and conscientiously graded, he does not hesitate to mention the fact in his letters.

He once disposed of a pen of twenty capons in three days at fancy prices, simply by addressing a note to his "list" in which was enclosed a copy of a letter received from a customer of the previous year. This satisfied customer stated that the capon meat was the most delicious he had ever tasted and that he would be in the market for more, because it had made a great "hit" with his family, and had opened his eyes to new delights in the way of dressed poultry. The letter proved to be a good advertisement. My friend finds that this method of direct solicitation brings returns at less cost than any other means he has tried.—Albert J. Mason.

A Handy Contrivance Easily Made

A good sack-holder can be made from an old coal-scuttle, with the bottom removed. Three hooks should be riveted on the outside of the scuttle, to hold the bag. The scuttle is then mounted on a stand, which may consist simply of a 2x2 or 2x4 upright nailed to a base and sufficiently high to hold a full-length sack not quite clear of the base. Since the scuttle is wide at the top, it is convenient in filling the sack with a scoop-shovel. It acts really as a funnel; yet the bottom is sufficiently large to extend the mouth of the sack. The bottom of the sack rests on the base and as it is filled tends to hold the frame steady.

Green Poultry Feed

REDUCING the bulk of green feed by dehydration and "bringing it back" as needed, by soaking in water, is the interesting possibility cited by S. A. Burrows of San Gabriel, an authority on the dehydration of fruits, meats and vegetables, and until recently a "dollar-a-year" expert in the employ of the United States Government.

Mr. Burrows, wro has been instrumental in interesting many Southern California fruit and vegetable growers in the possibilities of dehydration as a conservation and good business measure, believes that this rather unusual angle of the business will be highly developed in the near future.

With the improved dehydrating equipment such as he is now exhibiting at San Gabriel, Mr. Burrows believes that spare time could profitably be employed in drying beet-tops or other green feed in large quantities. This material, when soaked for a few hours in water, would return almost to its original state and increase in bulk many times. This feed could then be conveniently shipped, he points out, from sections where it is found in abundance to the poultry centers where so many birds are kept in "dry lots."

Should this system be carried out, it is apparent that great benefit would result for both producer and consumer. In many cases products which would otherwise be wasted could be sold at a profit; the poultrymen, on the other hand, would find such green feed less expensive than sprouted grain.

Apple Show Plans

The California Apple Show Association, which includes most of the apple growers in its membership, was organized to bring the orchardists engaged in this variety of fruit raising in California in closer touch with one another through the medium of annual exhibits. It is proposed to hold the annual Apple Show in Humboldt under the supervision of this organization the coming season, the date being tentatively fixed for early December. Invitations will be extended to all the apple producing sections of the State to send exhibits and compete for the awards which will be offered for prize displays. The affair will be on a large scale, as many of the Humboldt growers have promised exhibits in carload lots. Hearty co-operation is also assured from associations and individuals engaged in the business in other sections of the State. The show will be held annually for the express purpose of arousing a keener interest and friendly competition in the production of a better grade of apples for California.

Ants are responsible for damage amounting to millions of dollars annually. Don't let them get a start in your household, and don't let the Argentine ants infest your fruit trees, where they will protect the plant lice as well as inflict damage.

Ben Solves the Problem

"Gee, this is a hard life any way you look at it. These long, hot summer days I gits so used up I kaint do no work after three o'clock in th' afternoon, and have t' put off a lot of odd jobs fer rainy days in th' winter. Then when winter comes th' days is so short and it gets dark so early thet a feller kaint accomplish nothin' either. Guess th' easiest way out of it 'd be t' pull out an' camp up to th' lake like we did last summer. I c'd ketch fish an' save enough on th' meat bills t' buy th' wife a smaller water-bucket, so it wouldn't be so hard fer her to tote water as it was th' last time we camped. Yessir, that's the way we'll manage it."
—Ben Gonnadooit.

Boys and Pests

A BOY is a pest only in the mind of some crabbed old sour-dough, who has entirely lost the spirit of youth. But in spite of the dissimilarity, both boys and pests may sometimes be "controlled" in the same manner.

One of the best means of diverting a boy's attention from mischief-making is by giving him something harmless and more interesting to do.

Similarly, orchard and garden pests may frequently be side-tracked from their depredations by providing something other than the growing crop for them to feed upon. In France it is the custom in some of the grape-growing sections to plant asparagus between the rows to attract the beetles which molest the vines. One enterprising California apple-grower has set out a patch of blackberries and other small fruit near his orchard simply to furnish more attractive food for the birds while his fruit is ripening on the trees.

Used in conjunction with control and destructive measures, such devices are frequently of great assistance in the never-ending battle against pests. And to return to the boys, one of the very best ways to put their energy to good account is to enlist their services in fighting the pests. A small bounty on squirrel tails brings about almost unbelievable activity among a bunch of active, outdoor boys, with great benefit to the community, while a rabbit-drive or a grasshopper "roundup" is never really successful until the assistance of the "fellows" is enlisted.

The New Handle

The proper fitting of a new handle in a hay fork, rake, hoe or other hand tool is not always understood. First it is necessary to remove the old handle, but don't resort to burning, as the temper of the metal will be affected. Hold the tool in the vise and with a cold chisel drive out the nail which holds the metal to the wood. If the nail-head breaks off, drive it down into the wood with a punch until it clears the ferrule.

If the handle is broken off at the edge of the ferrule and it is impossible to get hold of the wood to pull it out, do not place the entire piece in the fire to burn the wood out, as is frequently done. Rather, heat a small bolt or a spike and burn holes into the broken piece of wood until it can be knocked or drawn out.

Now, instead of planing the new handle to fit the ferrule, or cutting it with a spoke-shave or draw-knife, use a wood-rasp. By means of this tool it is possible to make almost an exact fit.

After the new handle is fitted, do not simply drive a new nail into the wood, as this may result in splitting. Drill a small hole and put in a screw about one-quarter inch shorter than the outside diameter of the ferrule. Then the tool is fixed "to stay."

Portable Tractor Garage

An Eastern farmer who owns a small tractor has a very lightly constructed "garage" on runners, which the tractor can drag quite easily from place to place. He finds it much more convenient to take this shed with him for work in different parts of the farm than to bring the machine to the house every night, and believes the small investment is well repaid by the protection afforded the machine. The shed is made on a very light framework, has no floor, and is covered with canvas roofing; it weighs less than 700 pounds. He has in addition a compartment in his implement shed for storing the machine at headquarters for longer periods of time.

"Why My Tractor Is a Good Investment"

Cash Prizes for Contributions

For the best articles on the above subject, submitted by any tractor owner or operator, subscriber to Orchard and Farm (subject to the rules given below) we will give prizes as follows:

First prize	*$25.00*
Second prize	*15.00*
Third prize	*10.00*
Fourth, Fifth, Sixth (each)	*5.00*

Contest opens immediately and will close October 1st.
Only one manuscript accepted from each contributor.
Story must not exceed 1500 words.
Give facts and figures, when possible, and comparisons with horsepower farming as to cost of production.
Illustrations appreciated, but not required.
Write name and address plainly.

Address
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The next time friends call on you—call on Ghirardelli's! You'll find it equal to *any* occasion. And you'll be apt to say—as many another wise hostess has said:

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July and August in the Garden

Start the fall and winter garden now—the "second spring" in the Pacific West. This chart will answer all your questions, and may be applied in both the North and South, with such variations as are noted. The home food factory is the best answer to the high cost of living. Let the children share in the work and the profits.

Prepared Especially for Orchard and Farm

By Charles L. Schufeldt

KINDS, DEPTH TO PLANT, BEST VARIETIES.	TIME TO MATURE. HOW MUCH OF PLANT FOR ONE FAMILY. HOW OFTEN. HARDY—WITHSTANDS LIGHT FROST. TENDER—WITHSTANDS LITTLE OR NO FROST.	HOW TO PLANT, IRRIGATE AND FIGHT PESTS. HOW TO STORE OR KEEP VEGETABLES. HOW TO USE FOR TABLE ON SMALL ACREAGE.
Artichoke—One inch. [illegible]	Hardy—[illegible]	[illegible]
Beans—Plant for pole: [illegible] Wonder; Ventura Wonder (pole); French Mohawk.	Tender—Matures in 8 to 12 weeks. [illegible]	[illegible]
Beans—Plant for pole: [illegible] Kentucky Wonder; Northern Wonder; Wax; Speckled Kidney; Wax.	Tender—Matures in 10 to 14 weeks. [illegible]	[illegible]
Beans—Plant, dry: 3 or 4 inches deep. Pink or Navy (in Goodnut). Ventura Wonder, Navy.	Tender—Matures in 10 to 13 weeks. [illegible]	[illegible]
Beets—Two inches deep in light soil. Plant in March. Detroit, Round; Crosby's Egyptian; Sugar Mangel, Long Red.	Hardy—Matures for table in 60 to 70 days. [illegible]	[illegible]
Cabbage—One-half to 1 inch deep. Charleston Ball or Danish Ball Head; Copenhagen Market.	Hardy—Matures in 140 to 150 days. [illegible]	[illegible]
Cauliflower—One-half to 1 inch. Use Dwarf Snowball. Also plant Brussels Sprouts now.	Hardy—Matures in 100 to 150 days. [illegible]	[illegible]
Carrot—One half to ¾ inch. Danvers Half Long; Oxheart; Early French; Long Orange for stock.	Hardy—Matures in 60 to 90 days. [illegible]	[illegible]
Cucumber—One inch. Place [illegible] Plant 2 or 3 varieties. Boston Dark; Long Green and Lemon.	Tender—Matures in 60 to 90 days. [illegible]	[illegible]
Kale—Three-quarter inch deep. Tall Jersey; Thousand headed. Scotch.	Hardy—Matures in 60 to 90 days and remains green for a year. Good to combine with bulbs, best lots, etc. for [illegible]	[illegible]
Kohl Rabi—Three-quarter inch deep. Golden; White Vienna; Purple Vienna.	Hardy—Matures in 60 to 90 days. Repeat planting every 10 days. [illegible]	[illegible]
Lettuce—One-half inch deep. Big Boston; Iceberg; Los Angeles Market.	Hardy—Matures in 70 to 90 days. [illegible]	[illegible]
Onion—One-half to ¾ inch. White Queen is early. Also [illegible] Prizetaker, Red Weathersfield.	[illegible]	[illegible]
Parsnip—One-half inch deep. Large Fine; Hollow Crown.	Hardy—Matures in 90 to 120 days. [illegible]	[illegible]
Peas—Three to 5 inches deep in cool moist soil. Alderman; Telephone Hero; Twentieth.	Hardy—Aug. and Sept. best planting time. Another [illegible] Feb. [illegible]	[illegible]
Potatoes—(Irish): 5 to [illegible] inches deep. White Rose; British Queen; American Wonder; Burbank.	Half Hardy—In most sections plant any [illegible]	[illegible]
Radish—One-half inch. French Breakfast; Icicle; Mikado (very large).	Hardy—Plant short row 6 feet each month all year. Matures 30 to 50 days.	[illegible]
Spinach—One inch. Prickly Seeded for winter. Long Standing, Round, New Zealand.	Plant August to March. Likes cool weather. Hardy. New Zealand [illegible]	[illegible]
Squash—(Summer) 1 inch. Crookneck, Bush Scallop.	Tender—Six hills planted every 60 days. Ready in 70 to 90 days. [illegible]	[illegible]
Swiss Chard—One inch. Lucullus, Lyon.	Hardy—Any month except Nov., Dec. and early Jan. Plant 2 dozen plants for family, more for stock or poultry. Ready 90 to 200 days.	[illegible]
Tomatoes—One-half inch. First Early, Stone; Ponderosa.	Tender—Raise medium and late plants in open ground. One to 3 dozen plants for fresh, for canning for catsup. Matures 90 to 150 days.	[illegible]

Miscellaneous—It is too late for winter squash and pumpkins except "Boston Pie." Late for melons, peppers, sweet potatoes, egg plant and celery. Plant endive and spinach in September. Plant cucumbers [illegible] same as squash. Plant sweet corn for late crop where frosts hold off until November. Wait until January or February for asparagus and rhubarb.

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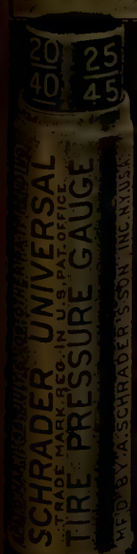

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In the Garden

By Charles L. Schufeldt

Plant seeds in moist but not wet, sticky soil, and there will be no necessity for irrigation until plants are well up.

Frequent sprinkling is an aggravation to a garden. It keeps roots near the surface and causes rapid changes in the moisture content of the soil. Fill trenches between rows with water. Follow irrigation with cultivation. Coax roots to go deep and far for plant food and moisture.

Flooding plants close to stems shuts off air from roots; this is dangerous to most plants. It prevents the work of helpful bacteria. Water should spread rapidly in soil, like a fog admitting air with it. Good drainage means that soil moisture spreads thin to admit air deeper than roots penetrate.

Break the crust of the soil, or better, never let one form. The sun will harden the surface after water is applied, if cultivation is delayed. The crust keeps out air and increases loss of soil moisture by "wick" or capillary action. Loose, dry top soil acts as a blanket to make moisture conditions constant below the surface and to permit penetration of air.

Manure from rabbits, goats, poultry, cattle, horses, hogs or sheep is always best for gardens if composted with straw, grass or litter, in order to conserve the liquids and thoroughly to decay the material without its "fire-fanging." Acid phosphate or ground phosphate rock is excellent to sprinkle over droppings to prevent loss of valuable ammonia. Lime is also used. Keep it moist until decayed and then apply.

All garden soils, no matter how well manured, should be renovated every few years by growing a crop of alfalfa, sweet clover or other legume and plowing under a crop after making a cutting or two for hay. No treatment of soil can take the place of crop rotation.

All vegetables give the best results when their growth is rapid and steady. Slow growth tends to develop strong flavors and rough, woody conditions. Varying conditions of moisture and fertility tend to cause many vegetables like lettuce, onions, kohl rabi, cabbage, beets, etc., to "go to seed" early.

No one realizes to the fullest extent the pleasure to be derived from a garden until he knows the difference in the flavor of such foods as peas, corn and beans when they are prepared for the table immediately after they are gathered and when they must be purchased on the market wilted and with delicate flavors gone.

Each soil, each locality, each season, each personal "whim" calls for different methods and for different varieties. Wisdom says: "Let the experience of others, as well as your own, be your teacher."

At this season, plant deeper in light sandy soil than in heavy soil. Be sure to plant in moist soil. Place a light covering of fine soil over the seed, then rake over it more loose soil.

Altitude affects the growing season. Calculate when the first killing frosts come. Count back from that date the number of days it requires for a given vegetable to mature and you have the last date when it is safe to plant in your locality.

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-30 cents of each dollar saved!

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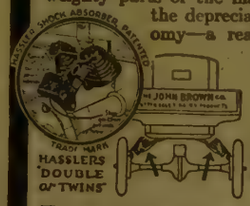

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Third: This explains why the National Poultry Company's methods stand out so strongly, why we were unanimously chosen by the Poultry Producers' Association of Southern California, a body of 530 leading poultry men, to exclusively handle 100,000 of their broilers.

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Sixth: It has been our conviction that in the poultry business, as elsewhere, patronage will always go where it is best treated.

Seventh: It has been our conviction also that the more the producer gets out of his shipment, the better showing we can make for ourselves in increased sales. The new business method is the increased volume of business on a small margin of profit.

Eighth: The National Poultry Company realizes its obligations to continue this same method with increasing usefulness to producers.

Ninth: It is unthinkable now that we should imperil our position by abandoning the policy that has made us.

Tenth: The above methods have always been the standard which J. Will Blackman, president of the National Poultry Company, has applied in building up this business.

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To Grow Good Fall Potatoes

(Continued from Page 4)

hills. A man follows and picks up the tubers. They are dug just as the tops are beginning to turn from yellow to brown or a little earlier before the potatoes are fully matured. They are exposed to the sun from 30 to 70 minutes, but not long enough to sunburn. This hill selection is very satisfactory but even then care must be used to sort out the best tubers for seed. If choice hills are not thus selected, then blocks of hills in choice sections of the field should be chosen and the tubers carefully sorted. The potatoes are placed in piles and covered about a foot deep with straw. The piles are then sprinkled thoroughly every day for about two weeks or every other day for about four weeks so that the water goes down through the potatoes. The potatoes are piled upon sloping boards, in order to provide drainage, or they are piled on sand on a high piece of ground so that water runs off quickly.

It is important to protect the seed from the tuber moths which are prevalent in many sections. They fly soon after sundown and the piles must be covered with canvas or kept in a tight building with screened openings.

Do not begin the sprinkling until about two weeks before the time to plant the second crop, which is from July 10 to August 20. After 10 days or two weeks under the straw, the tubers are removed, dipped for one and one-half hours in sacks in a solution of 1 ounce of corrosive sublimate to each 8 gallons of water. They are then cut and planted at once. Tubers should not be left for more than a day after being treated with the poison solution before being planted.

Starting the Sprouts

The maturing of the seed should result in starting the sprouts. This may require three or four weeks, but the ideal seed potato has sprouts from a quarter to a half-inch long. The sprouts should be stubbed and greenish because of having had some light through the straw while maturing. If the piles are not too high and if they are in the open or under trees, the sprouts will be stronger.

It requires considerable practice and judgment so to time the processes as to have the potatoes ready to plant at the same time the soil is ready to receive them. It is far more difficult to prepare a seed bed for planting the fall crop of potatoes than it is to prepare one for the spring crop.

Before leaving the subject of the seed let us emphasize the importance of hill selection of seed. Some growers select the best tubers from the best hills year after year for from 4 to 8 years before they change or import new seed. When importing new seed they plan to hill select it for at least two seasons before using it for a main crop. There are a few growers in Southern California who have grown and selected their own seed for twelve successive years, and they claim that their crops continue to grow better in consequence.

Planting Methods

It is well to drop the tubers into the furrows as soon as they are opened and to close the furrows at once, covering the spuds about 5 inches deep or even 6 or 7 inches in fairly light soil. It is advisable to give the ground a light harrowing three or four days after planting and again just as the plants begin to show or are about two inches high. Use a spike-tooth harrow, teeth set about straight. Practically no harm to young plants will result unless the teeth reach deep enough to tear out the planted pieces.

Planting with a machine is excellent practice when the soil is right. In some cases two or more growers living near each other operate a mutually-owned planter. The planter is especially of value for the fall crop because the potatoes can be planted rapidly when the soil is cool and moist.

Where soil is naturally light, loose and well drained and not weedy, some growers drop the pieces in every third furrow when plowing just after the second irrigation, and then harrow. Usually, however, it is best to plow and harrow and "furrow out" and then cover with a one-horse cultivator, with wings turned in, or with a light harrow. Care must be exercised to make the furrows deep enough. Rows should be 36 inches apart in heavier soils and 38 to 40 in light soils, leaving ample room for furrow irrigation and cultivation. It is well, in planting the second crop, to plant quite close in the row—even as close as 12 inches.

After the plants become so large that the straight-tooth harrow can no longer be used, the cultivator should be kept going quite constantly, or so that there is a cultivation about every 10 days. Weeds should never be allowed to start. When blossom buds begin to form see that cultivation is

(Continued on Next Page)

Selected Hills of Pedigreed Watsonville Potatoes

(1) American Wonder. *(2) British Queen.*
(3) White Rose. *(4) Burbank High Top.*

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not too close to the plants but that a little dirt is thrown up over the roots by the wings of the cultivator. It sometimes pays in cold cash to have the last work of hilling-up done by men with hoes, keeping horse or power cultivators off the field. Under no circumstances permit the soil to become hard or crusted after an irrigation.

Irrigation

One to three irrigations will be required after planting, depending upon the nature of the soil and the thoroughness of the first one. The amount of water required varies from 1½ to 2 acre feet. The first irrigation will usually come when plants are about 6 to 10 inches high, which should be from 4 to 6 weeks after planting. After that water should be applied about every 12 to 18 days, followed soon by cultivation. Even content of moisture is very important.

Irrigation usually ceases soon after blooming has well begun, because of the fact that too much moisture applied as tubers are maturing may cause rotting. This is more particularly true in cases of poorly drained or heavy soils. As the water is run in the furrows care should be used to keep it from flooding around the plants. This means that the ground must be leveled before planting. Water should seep under the plants and not flood around the stems. Where rains occur the nature of the plant is to shed much rain away from the stems.

Harvesting and Marketing

It pays to use special potato-digging machines on large acreages. Growers may combine in the use of harvesting machinery. A lister will throw the potatoes out on both sides and get a larger per cent out than a plow. The fall crop should be permitted to mature fully; they keep better when the skins do not slip.

Many growers find that it pays to grade potatoes well before selling. In storing it is important that potatoes not be piled too deep and that they be kept in cool, even temperature of 35 to 40 degrees F. in dark cellars or store-houses.—C. L. Fenton.

New Bulletins

The Dean says: "There was a time when a Government or Experiment Station bulletin was very 'dry reading.' Even we who helped prepare them now admit that. But the new bulletins contain a great deal of essential information, attractively edited and so written that it is easily understood. Every farmer should send for the bulletins dealing with this business."

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Strawberry Culture	1027
Feeding Horses	1036
Strawberry Varieties	1043
Fig Growing	1031
(Deals with methods in other States)	
Care and Repair of Farm Implements (No. 5 of a series—grain separators)	1038
The City Home Garden	1044

Among the recent publications of the University of California are the following, copies of which may be obtained free of charge by addressing the Director, State Agricultural Experiment Station, Berkeley, Cal. Order by number.

	Circular No.
Salvaging Rain-Damaged Prunes	212
Saving Raisins by Sulphuring	211
The Function of the Farm Bureau	209
Suggestions to the Settler in California	210
Evaporators for Prune-Drying	213
Almond Pollination	306

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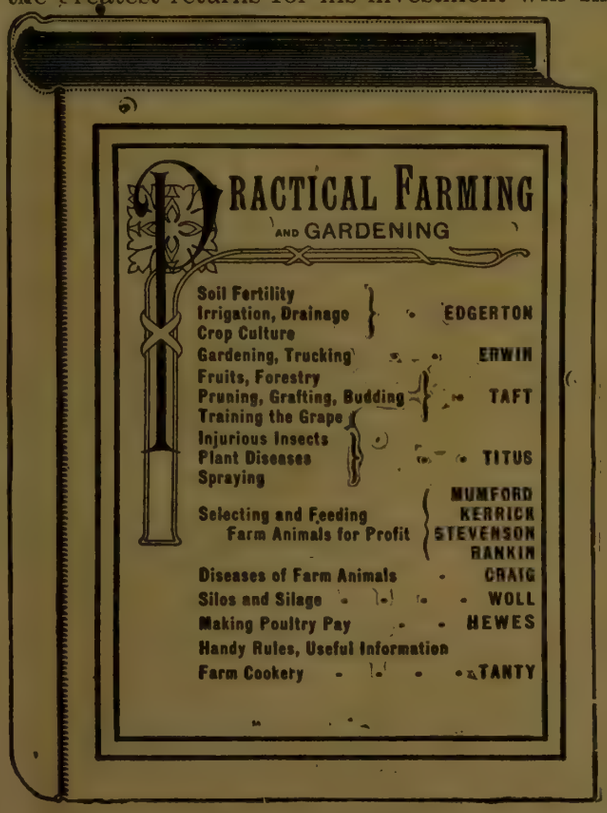

EDITED BY
WILLIS MACGERALD
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This work has been divided into departments, each covering subjects of vital importance, and each prepared by a specialist in his line, who has devoted his life of thought, study, experiment and practical experience to his special subject. The list of authors whose names are familiar to wide-awake farmers will be found on accompanying cut of book in connection with the subjects covered by each.

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"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.

More Money in Figs Than Pigs?

A good subject for debate, perhaps. We should say, however, that under present conditions the man who has either is to be congratulated, and the very fortunate man who has both is about as far from the yawning portals of the poor-house as any of us ever get. At any rate, here are a few pros and cons in fig-production, as set forth by a practical rancher.

FIGS, although considered for many years of minor importance, are forging ahead so rapidly in interior California, that before long they bid fair to rival in value any of our deciduous fruits. With their increasing importance has come more careful attention to selection of variety.

The writer has set out a small acreage to Calimyrnas, the standard fig of commerce and the one most widely planted in California. However, the Black Mission is meeting with much favor here. O. G. Brundage of the Exeter district, one of the largest and most successful Calimyrna fig growers of the State, has made a new planting of 80 acres to the Black Mission. This he has done in spite of bonanza profits made from Calimyrnas. Here is a summary of his reasons:

All the trouble and expense of caprifying Mission figs is avoided, and land ordinarily used for capri trees can be used for edible figs.

A partial failure in caprification of Calimyrnas means a partial crop failure, but the Mission will bear anyway.

Although the price is lower than that of Calimyrnas, the yield of Missions is frequently so much heavier that the difference in price is overcome.

The Mission is a vigorous, sturdy tree and crops are not much affected by unfavorable weather conditions, nor by development of "splits" and "sour figs."

The fresh fig business is proving extremely profitable and very promising, and the Mission, in spite of its thin skin, is a fine shipper and delicious eating fig. It also gives an excellent first crop of large, attractive fruit that sells readily, while the Calimyrna has no first crop at all.

Other men who have a few Mission trees commend this variety just as highly as does Mr. Brundage.

On this subject I will quote a question asked by a local real estate man: "Can you tell me," he said, "why people plant Mission figs on this high-priced land in the thermal belt, when they can go out toward the floor of the valley and buy beautiful land for much less money, where the Mission would thrive?" There is something to be said on both sides in answer to this question, which is certainly one well worth considering from all angles.

(The editor of Orchard and Farm will welcome any discussion by readers of the fig situation, with especial reference to this phase of the subject. What do you think about it?)

How opportunities in the fig business are overlooked is shown by the experience of Frank Emery, whose ranch is just north of Exeter. He had about a dozen border or yard fig trees, including four varieties and one capri, but had never attempted to market them, merely giving a few to the neighbors. About three years ago he picked up several boxes of Calimyrnas, hauled them to town and, to his surprise, was offered $65 for them. He returned home, carefully picked up the rest of the figs and sold over a hundred dollars' worth that year. He has been a fig enthusiast ever since, and has dug up his Adriatic and scrub Mission varieties.

His one-capri fig is a fine one. Last year he sold the crop on shares, reserving what he needed for his own trees. The buyer did all the picking and retailing of fruit and handed to Mr. Emery $40 as his portion of the deal. Mr. Emery netted more than $20 per tree on his Calimyrnas.

The Honora Realty Company of Lemon Cove makes big profits in shipping fresh both first and second crops of the Black San Pedros from eleven acres, drying only the culls, over-ripe fruit and fallen fruit.—Tulare Farmer.

Cutting Sunflowers for Ensilage

THIS photograph was taken at the Montana Agricultural Experiment Station, where large crops of sunflowers have been grown and successfully converted into ensilage. The article on sunflower culture, published in the June issue of Orchard and Farm, described some of the work done in Montana and other inter-mountain States with this plant, and showed how it compares favorably in palatability and feeding value with corn. We predict that increasing use will be made of sunflowers in this State, particularly in high, dry sections where there is need of more livestock and where there exists a shortage of feed. Sunflowers grow rapidly, and are frost and drouth-resistant to a remarkable degree. Although the illustration shows the process of hand-cutting, large acreages are frequently harvested with the corn-binder.

The Riverside Convention

(Continued From Page 3)

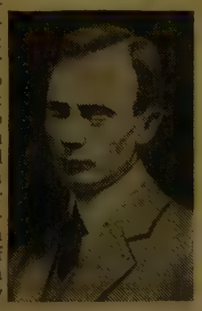
nd packing at 70 cents a day. There s a good market, however, for all of ur native crop, and we are optimistic s to the future of the business now hat we, the growers, hold the reins. The day is past when an individual rower can stand on his own feet; nost of the producers who remain utside the various marketing associaions are glad to share in the benefits f them."

ARLYLE THORPE, manager, California Walnut Growers' Association: Since the organization of our association, we have gained 42 acres for every acre withdrawn. Progressive growers have been quick to see the benefits that only an association of this kind can bring them. Although we keep salaried representatives abroad, have 150 men at the market centers of this country, maintain offices in Los Angeles nd conduct a field department for exerimental work in the groves, we have ut the selling cost of the product of ur members one-half, saving a quarer of a million dollars to the growers n this respect alone. We now market 5 per cent of the walnuts. Since the roducts of the walnut industry are oubling every six years, it is necesary for the association to do a great eal of promotion and sales work, and e have undertaken national sales and dvertising campaigns which have roduced wonderful results. We are ow attempting to find a machine that ill brand every individual walnut ith the Association trade-mark, the liamond,' and, as a result of advertsements soliciting suggestions, we ave been fairly 'swamped' with odels, blue-prints and the demonrations of various inventors. We re accomplishing all this work withut causing any advance in price to he consumer; that is the most wonerful feature of this co-operative arketing movement as applied to all ther branches of food production as ell as walnut-growing."

EORGE L LYTLE, director, Alfalfa rowers, Inc.: "After a little more han a year of co-operative marketing, the Alfalfa Growers are now doing a business that in quantity will compare favorably with that of many of the older co-operative organizations of the State, and we expect to improve the quality so that you will all be clamoring for alfalfa for breakfast. We confidently expect to roduce the best breakfast food on arth. It may be in the form of a risp package food, or it may be in e form of milk and cream. But e are very confident that the very est food for the race would be a risp alfalfa breakfast food with plenty f milk and cream over it. A statisian recently observed that a city in e Middle West had about double e population that it had two decades go, but that it had only about onealf the number of stores. An investiation showed that the wants of the eople were better supplied with the wer stores than they were when they d many, which were necessarily nall and incomplete as to stocks. Is t this significant? Does it not suggest something better than our old competitive system of distribution? Is it a competitive and necessarily incomplete system of distribution that we wish? Or do we wish a system that will be at the same time direct and complete? The system of individual marketing is wasteful of the time and energy of the producer and is unsatisfactory to the purchaser, as he is unable to get the production in the quantity, or in the form, or at the time he desires. By co-operation among the producers, we can eventually secure economy and efficiency in distribution. Without co-operation among the producers, the greatest men of affairs cannot give us system and economy in distribution."

MARK GRIMES, manager, California Berry Producers' Association: "Our organization came into being because there was such a spread between wholesale and retail prices of berries that the growers could not make any money. It was easy for us to organize, because the growers knew conditions couldn't be worse and were willing to take any sort of a chance. We now have 98 per cent of the growers with us. We have saved the industry, reduced and stabilized the price to the consumer, and placed the business of each member on a profitable basis. The berry shipper was formerly the victim of a vicious and dishonest system. He is now not only the master of his own destiny, but the best friend of the consumer."

ORLO ASHLEY PRATT, personal representative of Governor Cantu, of Lower California, and member of the National Chamber of Agriculture of Mexico: "The Governor has asked me to express his regret at his inability to meet with you personally, and has given me a message to deliver to you. The interests of California and the State of Lower California are inseparably intertwined. Co-operation in all matters affecting the common welfare will bring about the most satisfactory results for all concerned. This is especially true as regards quarantine regulations and the control of insect pests and plant diseases. The Governor and his people are willing to do everything in their power to bring about the formation of a protective league among the Western States of your country and British Columbia and Lower California, and so to enforce the quarantine laws that all will be protected from invasions of dangerous foreign pests. He realizes that the most successful development of our agricultural resources, as well as the protection of the horticultural industries of the United States, calls for the greatest care and vigilance on both sides of the border. In this, as in other things, the people of Lower California are prepared to show the spirit which has resulted always in the maintenance of most amicable relations."



Wherever future conventions may be held, it is difficult to imagine more delightful surroundings than were afforded at the beautiful Mission Inn, scene of this year's meetings.

No greater impetus could be given California agricultural industries than that accorded by gatherings of this kind. More of them, with greater attendance, are desirable. We trust that at least once a year, if not oftener, there will be a similar "gathering of the clans."

A Comparison of Costs

A graphic picture of the high cost of doing business is shown by the rise in a long list of commodity prices during the past five strenuous years.

By the exercise of unparalleled economies, telephone rates have been kept almost unchanged.

The fact is, the increase in the cost of commodities has resulted in what is equal to a decrease in telephone rates. In other words: The dollar which was spent for the telephone has bought more than twice as much as the dollar spent for the commodity.

The activities of reconstruction which are now upon the nation have put a great burden upon the telephone. This condition has made necessary an advance in telephone rates.

This advance does not exceed an average of eight percent; almost negligible as compared with the advances in other lines of industry, yet enough to cover the increase in the cost of operation.

Only through adequate revenue can there be assured the maintenance of a high standard of telephone service.

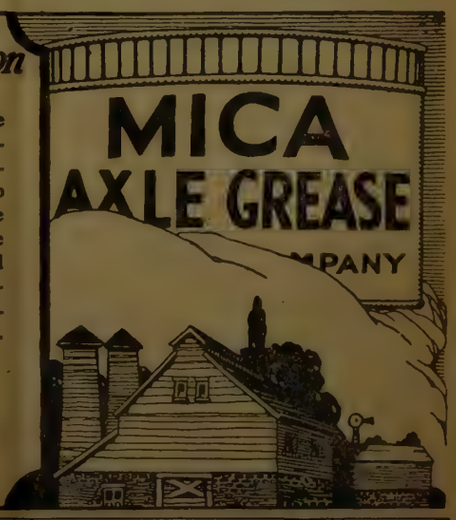
AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Added protection

Mica Axle Grease contains powdered mica—practically wear- and heat-proof. Fills up all roughness in the metal and makes the grease work better and last twice as long. Easier pulling. No hot boxes. Ask your dealer. Buy by the pail.

Standard Oil Company (California)



PLANT THE RIGHT SEED AT THE RIGHT TIME

Plant the right variety for your purpose, whether you are growing for home or market, or whether you are growing for cattle, horses, hogs, goats, rabbits or poultry.
See the 1919 Catalog of the

Aggeler & Musser Seed Co.
620 SOUTH SPRING STREET, LOS ANGELES.

All About the Strawberry Bush

(Continued from Page 4)

dency to go all to vines and to produce a small and inferior fruit where the soil is too rich or there is an over-abundance of water. Mr. Etter has found that most satisfactory results are obtained by giving the plants the best of care the first season and then allowing them largely to shift for themselves.

The Ettersburg plants grow in rank, vigorous bush form, the trusses holding the berries from one to eight inches from the ground. This characteristic is invaluable in districts subject to rain during the fruiting season, or where irrigation is resorted to, as it prevents the berries from lying in contact with the moist earth and so insures against decay. Most of the hybrids are also immune from damage from a drenching, as the fruit will continue to ripen normally after being subjected to a heavy downpour of rain. As Mr. Etter expresses it: "They shed water like a duck."

Of his entire race of hybrids, Mr. Etter has most faith in the Ettersburg Trebla, of complex pedigree but traceable, in ancestry, to the wild beach berries of Cape Mendocino. This parent stock is noted for its excessive vigor and robustness, characteristics which are transmitted to all its hybrids. The Trebla is a phenomenal bearer, producing as high as 25,000 quarts to the acre during a picking season of six weeks and that without irrigation. A patch of this kind of berry is easily taken for a potato patch at a short distance, as the bushy vines practically cover the entire ground.

A visitor, noting the luxuriant growth at the Ettersburg experiment place, was prompted to remark about the richness of the soil and its peculiar adaptation to strawberry culture. For answer, Mr. Etter showed him a row of the ordinary types of cultivated strawberries in a patch of the Ettersburg hybrids; the former were poor and scrawny, giving little promise of a crop, while the hybrids alongside were in a most flourishing condition.

At fruiting time, the Trebla berries present a very peculiar appearance, the plants being weighted down by the quantities of deep red berries. The fruit is of strong acidity but promises to be a banner canning berry as it is solid to the center and neither breaks down nor loses its color when cooked.

The Alpine berry has also left its impress upon many of its progeny. Used as a simple cross with another wild species, the Cape Mendocino, an intensely red berry that can be picked without the hulls, much like a blackberry, was produced. The color is not only on the surface but extends to the center and will stain the fingers. It does not appear to fade with the light, as samples of this fruit have been kept on exhibit for two years without a noticeable change in color. It is also a prolific bearer, the profusion of blossoms presenting a beautiful sight when the plants are in bloom. Of the 200 varieties which Mr. Etter has deemed worthy of further consideration, each has been retained because of some peculiar characteristic of plant or fruit that will recommend it to sections of varying soil and climatic conditions; freak creations have had no part in the experimental work, although a number of novelties have been produced. O. M. Taylor of New York has tested out seventeen of the varieties which have been introduced to the market, and, under these greatly-varying conditions of both soil and climate, has found four that appear to be especially adapted to the Eastern environment. At the various experimental stations in California and by hundreds of men interested in berry culture, either for the markets or for home use, various of the Ettersburg berries are being tested out with splendid results. It seems reasonable to predict that the Ettersburg hybrids will be the means of greatly widening the sphere of the strawberry shortcake.

An Interesting Establishment

The Ettersburg Experimental Farm, which is the home of this new race of strawberries, is located in a little mountain valley in Southern Humboldt County, about forty miles south of Eureka, in the very heart of the giant redwood country. It is only about six miles from the ocean and was located here by Mr. Etter because of the prevalence of clear atmospheric conditions, well adapted to the experimental work to which he has devoted his life.

The experimental gardens take up but a small corner of the section of land which comprises the Ettersburg ranch.

For a generation Mr. Etter has given practically all of his attention to experiments with various kinds of berries and apples, although he also has produced some unique creations in other kinds of fruit, forage plants and flowers.

It is, however, by his strawberries that he is best known, and the representative of a large Eastern firm recently concluded negotiations to handle the available output of the experimental gardens in the Eastern markets. While, as Mr. Etter expresses it, "A strawberry is just a strawberry to most people, more or less sweet or sour as the case may be," there is every reason to believe that the time is close at hand when Americans will be as particular in their choice of berries as they are now of apples. The Ettersburg hybrids, with their delicious wild strawberry flavors, will do much to educate the public in the fact that berries, like apples, are "different." And then, too, it is so convenient to pick them from the bush!"—J. A. Robson.

Grasshopper Warning

A GENERAL survey of the grasshopper situation shows that this pest is now making its appearance in great abundance. In some of the hills certain species have been flying for some time.

Many localities may expect thousands of dollars' worth of crops destroyed if the most drastic control measures are not taken up at once. Special warning is given to the farmers in the counties of Tehama, Glenn, Colusa, Yolo, Trinity, Merced, Tulare, Kern, San Luis Obispo, Placer, Stanislaus, Yuba, Sutter, Plumas, Siskiyou, Shasta, Butte, Fresno, Kings, Ventura and Imperial.

Poison the grasshoppers in fields and orchards with a mixture of the following:

Bran	25 lbs.
Paris green	1 lb.
Cheap molasses	2 qts.
Lemons (ground very fine)	½ dz.
Water	4 gal.

Sow the bait broadcast or spread in rows. This method has also proved to be very effective in combating the cut worms which have ravaged Arizona alfalfa fields.

WARNING—Keep chickens away from poisoned fields.

The "Green" Hand

The Boss—"Now, when you finish the cold-frame, I want you to fix up the hot-bed."

His Nibs—"If you don't mind, Sir, I'd like to do something else. I never could stand extremes of heat and cold."

Saving the boys for the farm instead of from the farm is the trend of modern educational developments.

ORCHARD and FARM

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On practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling why, when, where, who and how much.

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COUNTRY PROPERTY—For Sale

$35,000—61 acres located a short distance from Mountain View, in a good location. There are 41 acres in alfalfa and 20 acres in tomatoes with a small family orchard. Improvements consist of a fine modern residence of 7 rooms, barn and a complete set of outbuildings. There is a first-class pumping plant on the property which furnishes an abundance of water for irrigation the year around. The place is fenced and cross-fenced and divided off into several fields. Can be bought on terms.

$500 per acre. 40 acres, all in bearing alfalfa, located in the rich Mountain View district, and divided into two fields; irrigation from pumping plant and artesian well. No buildings. Terms of payment can be arranged.

DAIRY AND ALFALFA LAND
$205 per acre, for 113 acres rich vegetable, dairy or alfalfa land; located near Mountain View, in a very good district; improvements consist of a 5-room ranch house, 3 barns, pumping plant and two flowing artesian wells. The property is fenced and cross-fenced and divided off into six different fields; a remarkably cheap place; one-third cash required.
WILLIAM P. WRIGHT
Mountain View, Santa Clara Co., California.

GOVERNMENT LANDS

THERE is a big tract of smooth, fertile valley land in California, now open for entry under the homestead or desert land laws. This land is now being put under irrigation by Farmers' Mutual Ditch Co.; 5 miles of the ditch is now constructed. This is a valley of opportunity, close to pine forest, adjacent to lakes, contiguous to mountains; rich soil, cheap water, easy terms. Don't pay location fees. For particulars address INTERSTATE DEVELOPMENT CO., 826 L. A. Investment Bldg., L. A., Cal.

FARMS FOR RENT

WHEAT RANCH, 1280 acres, Franklin Co., Wash. Level, all under cultivation. Complete every detail. Necessary buildings, inexhaustible well, windmill, gasoline engine, concrete reservoir, etc. Possession after harvest. Rent begins Feb. 1st, 1920. Low cash rental and good proposition to good, industrious farmer. Write owner, Room 311, New Call Building, San Francisco.

FARMS WANTED

WANTED—To hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

GOVERNMENT LANDS

WHERE AND HOW to obtain Government Land; also lists School, Indian and State Land, $1, check or currency. Joseph Clark, P. O. Box 688, Sacramento.

REAL ESTATE FOR EXCHANGE

WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

FARMS FOR SALE

Mountain Ranch For Sale

196 ACRES

60 acres high-grade fruit land, 50 acres suitable for grain, balance good grazing land. $3000 worth of uncut wood on the place. About 20 acres cleared, 12 acres fenced and partly planted to fruit trees. Plenty of water. Four-room board house, small barn, storehouse and pig pen. Price $3700. No agents or exchanges. Address Frank Mason, Badger, Tulare Co., California.

AT A BARGAIN—640 acres, all under fence and cross fenced into five fields, 300 acres under cultivation, balance timber and grazing; 100 acres summer fallow; 2 sets of buildings; houses, 5 rooms each; barns and outbuildings, 5 good wells, 7 living springs besides water holes in creek the year around. All farming machinery, 35 head of cattle, 8 head of horses, 50 sheep, 120 Angora goats, 20 hogs, 3 dozen poultry, 30 tons hay, things too numerous to mention. If taken at once, $30.00 per acre. No lease, no trade. Address Box 831 Orchard and Farm.

FIGURE THIS OUT for yourself: Apricots are selling for $100 a ton; good orchards yield from five to ten tons per acre. Do you want 106 acres good apricot land, ten miles from Stockton, on good road, at $150 per acre, one-third cash? Address Owner, 701 W. Poplar St., Stockton, Calif.

480 ACRES good grain land near Tracy for $75 per acre; new irrigation ditch cuts across one corner; an extension of either of two irrigation districts will give all this land water in the near future. Owners, 701 W. Poplar St., Stockton, Calif.

FOR SALE—600 acres of good, level land, unimproved, in Klamath County, Oregon; good for alfalfa, grain or stock; price, $16 per acre; easy terms. Mrs. Mary Johnson, 414 Wilson ave., Vallejo, Calif.

RANCH FOR SALE—104 acres; 30 acres beans, 9 acres hay, 4 acres gum grove; balance pasture; 8 miles from town. Route A, Box 167, Lompoc, California.

34 ACRES—Good improvements, good soil, water and grass. Fine for berries, vegetables, hogs and cows. Price $3000. No trade. H. Koenig, Fort Bragg, Calif.

REAL ESTATE

MEXICO.
Far-seeing investors are looking to Mexico. They predict a great boom there. The writer has just returned with some farmers who bought and are returning to cultivate their land. We have a number of American farmers who are located there at present. They are only too glad to explain the richness of this great valley, with the many possibilities for the small investor that cannot be obtained elsewhere; only ninety miles from the border, on the main line of the Southern Pacific Railroad. Cheap land, cheap labor and low taxes. Good land in Mexico is bound to rise in price soon. Now is the time to buy. Call and let us explain our plan of colonization to American farmers.
A. M. CONARD,
707 I. N. Van Nuys Building,
Los Angeles, Cal.

FOR SALE — Mountain ranch, 40 acres deeded; large canyon, range free, covered with oak and pine; wonderful opportunity for hogs; 20 acres under irrigation; hog-tight fence; family orchard consisting of cherries, apples, pears, English walnuts; 5-room house, furnished. Price $3500.
DR. G. W. HARVEY,
Care La Grande Hotel,
Chico, Cal.

160-ACRE MOUNTAIN RANCH, 14 miles of Ukiah, Mendocino County. Fine for summer home, good hunting and fishing. Reasonable for cash. For particulars, address Box 237, Ukiah, Calif.

WANTED—Acreage to lease Japanese Headquarters. Nippon Realty Co., 105 E. First St., Los Angeles.

FARM LANDS, HOMESTEADS

FOR SALE—LUCK UNNECESSARY TO GET RICH if you have cheap California acreage; I can sell you 40, 80, 160 acres near railroad town, boulevards, electricity water soon; price $10 to $25 per acre; now listen: land within one mile is producing $200 per acre, Coachella Valley. O. S. WILSON, 72 Story Bldg., Boiwy. 1.

WRITE FOR our free circular on cost of turning raw land into producing alfalfa fields. Good land in Northern L. A. County in the water belt, $65 an acre; one-tenth down. Rich & L. Ranch, Fay Bldg., Los Angeles, California.

IF YOU WANT LAND, either for a home or as an investment, write the California Farms Co., Stockton, California.

FARMERS CLASSIFIED MARKET PLACE

POULTRY

Our Baby Chicks Lead

WHY?

Because they are properly hatched and handled and we can supply chicks

EVERY DAY

—We guarantee a full count of live chicks at destination on lots of 25 or more.
—Poultry—all breeds. Send for Price List.
—EVERYTHING IN HAIR, FUR AND FEATHERS.

FANCIERS' EXCHANGE,
640 So. Main Street Los Angeles, Cal.

BARRED PLYMOUTH ROCKS—Champion prize winners and wonderful heavy layers. We are selling hatching eggs from twelve grand matings. Send us your order early and get in line with the most profitable era ever known in the poultry business. I have made a specialty of Barred Rocks for over twenty years. That's why our birds win at all the leading shows. "Nothing Better in Poultry" than Vodden's Barred Rocks. Vodden's Rookery, Los Gatos, Cal. Catalog free.

BABY CHICKS FOR SALE—250,000 S. C. White Leghorn baby chicks from heaviest laying (Hoganized) stock. 25, $3.50; 50, $7.00; 100, $12.50. Special prices 500 and 1000 lots. Safe delivery guaranteed. You pay only for chicks received alive and in good condition. No money in advance; pay on delivery. Shipped safely anywhere west of Rockies. Finest hatchery in the world. Established 1898. Must Hatch Incubator Co., 432 Seventh Street, Petaluma, Calif.

POULTRYMEN — The Northwest Poultry Journal, one of the leading poultry publications of this country, may be secured, including one year's renewal subscription to Orchard and Farm, for the small sum of 25c. Take advantage of this opportunity of securing a year's subscription to each of these publications by mailing your 25c today to Orchard and Farm, Examiner Building, Los Angeles.

"EGGS, White Leghorns from 230 to 280-egg hens, mated to cockerels of the 250-280-egg type. Bred for 16 years for vigor, heavy laying and standard requirements. Trapnested and Hoganized. McFarlane and Barron strain. Eggs, $1.50 a setting; $7 per 100. Chicks, $15 per 100. A. Worel, R. F. D. 3, Napa, Calif."

BABY CHICKS from my thoroughbred, heavy-laying strain of S. C. White Leghorns. Am booking orders now for July, August and September delivery. Write for particulars. Every order receives my personal and most careful attention. J. R. Heinrich, Poultry Yards, Arroyo Grande, California.

THOROUGH BARRED P. ROCKS. Egg record 1917 average 190 eggs per hen; 1918, 210 eggs. Hatching eggs $2.50 per 15, chicks March and the following months 30c each. Warren Poultry Yds. Phone 6599, 16 Little Delmas Ave., San Jose, Cal.

BABY CHICKS from my thoroughbred, heavy laying flock of S. C. White Leghorns; 14 years careful, successful breeding. Booking orders now for July delivery at reduced prices. Write for particulars. J. R. Heinrich Poultry Yards, Arroyo Grande, Cal.

R. I. RED BABY CHIX. Bred for eggs, color, size. Order now for September hatches. DENTON POULTRY YARDS, Campbell, Calif.

EASTMAN'S "BRED-TO-LAY" Hoganized and trapnested Barred Plymouth Rocks. HATCHING eggs. Now booking for FALL chicks. Fairmead Poultry Farm, Fairmead, Cal.

BABY CHICK SPECIAL—Rocks, Reds and Anconas, first-class chicks, any number, $16 per 100. McFarland Strain Leghorns, $13 per $100. Hatches Saturday and Wednesday. A. G. Rowe, Inglewood, Calif.

GET BABY CHICKS NOW. Write for free booklet on fall chicks. See why they pay. Several varieties every week. Only good, strong youngsters shipped. Stubbe Poultry Ranch and Hatchery, Box 67, Palo Alto, Calif.

S. C. WHITE LEGHORNS. Standard bred and fine producers. Eggs and chicks. Prices right. Arthur R. Schroeder, Mayfield, Cal.

FREE BOOK, "CHICKENS FROM SHELL TO MARKET," on application. Coulson Company, Petaluma, Calif.

WEBSTER, WEBSTER & BLEWETT, Savings and Loan Bldg., Stockton, California. Established 50 years. Send for free book Patents.

WE NEED A LIVE BOY OR GIRL in every territory to look after our renewal subscriptions; big wages can be made at this spare-time work. Full details will be mailed on application. Address Orchard and Farm, Examiner Building, Los Angeles, Calif.

POULTRY

FALL CHICKS—Pure-bred S. C. White Leghorns. We hatch only from selected two-year-old hens of PROVEN MERIT and produce chicks that thrive and make real profit paying hens. Send for our folder and price list and order now for August and September delivery; avoid disappointment later on. G. & C. POULTRY FARM, Sonoma, Calif.

BOOKING ORDERS for summer and fall delivery. R. I. Reds, Barred White Rocks, Black Minorcas, White and Brown Leghorn baby chicks. Want some? The Mission Hatchery, Box 7, Campbell, Calif.

BUFF ORPINGTONS, BUFF DUCKS, BOURBON RED TURKEYS. FREE mating list. THE FERRIS RANCH, Grand Ave., Pomona, Calif.

EGGS for hatching from prize-winning, heavy-laying Golden Buff Leghorns. W. L. Bartholomew, Chino, Calif.

CAPON SPECIALIST

DON'T LET COCKERELS GET TOO OLD before caponizing; 8 to 10 weeks is good if heavy breeds; no feed nor water before operation. Instruments, Book and Bow, $5.50. Furnish your table with this best of meat. Send stamp for reply. Mrs. H. Ament, 423 Kerckhoff Bldg., Los Angeles, Calif.

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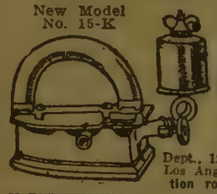

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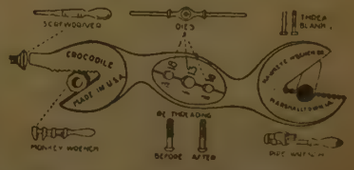

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Keep feeding them Besgrade Growing Chick mash—get the full development they are capable of before you change to a forcing feed.

Besgrade Growing Chick mash is a scientific feed, balanced to produce healthy, vigorous laying hens. We have a little pamphlet on the value of feeding a growing mash, written by an authority on commercial chicken raising. If you are interested in better laying hens, write for this pamphlet, also other literature on poultry feeds.

GREAT WESTERN MILLS
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More Light on Poultry Situation

(Continued From Page 23)

simulate dusk, while the fowls were going to roost, after turning down the larger lights.

"Double wiring, so as to have the smaller lamps on a separate circuit and switch, would prove more convenient, as it would enable us to turn the larger lights out, and leave the smaller lights on, without having to go to the poultry houses.

"For the purposes of this experiment, it was thought too expensive to put in double wiring; therefore, we unscrewed the larger light in the Benjamin socket, and turned the other light out, leaving the smaller or 8 candle-power lamp burning until the fowls had all gone to roost. We then turned off the switch in the house, screwed up the loosened lamp in each Benjamin socket, and turned the other individual lamp switches on, thus leaving the lights already set for an early morning light, by turning the switch in the house at any time desired.

"We found, however, that the 8 candle-power lamp was too strong a light to leave for the fowls to go to roost. We went visiting one evening, and left the smaller lights going, and when we came home at 11 o'clock found the birds as busy as at noonday. We therefore substituted 2 candle-power lamps for the smaller lights and overcame the difficulty."

As a result of this installation, Mr. Newell succeeded in doubling the egg output in twelve days. In an extremely cold February, 1943 eggs were gathered, as compared with 1095 eggs for the February preceding, which was quite mild. Marked effects of the longer hours were almost immediately noticeable. The entire flock began to show the same changes in appearance which occur ordinarily when spring arrives and the fowls are able to get outdoors.

Cornell Experiments

Probably the most extensive tests carried on to secure accurate data on this sort of egg production have been conducted by James E. Rice, professor of poultry husbandry at Cornell University. Professor Rice early became interested in the developments and instituted experiments both at Cornell and on farms throughout the surrounding country. In his report of February, 1919, Professor Rice states: "The experiments which the college has carried on in the use of artificial light indicate that for the person who is willing to assume the comparatively small amount of extra time and expense of installing a lighting system and who is able to handle it properly, there are several distinct advantages to be secured, namely: a larger proportion of high-priced eggs, a larger number of eggs per hen per year, a smaller amount of feed and other expenses required to produce a dozen eggs, and better general health of the stock."

These tests were carried on for a period of 48 weeks and accurate records of the laying capacity of two flocks of 100 hens and pullets each were kept, one flock being on the lighting system and the other without lights. The coops were kept lighted until 9 o'clock every night and, while the hens kept in the old way actually outlaid the others, the market receipts for the eggs produced under the system of illumination amounted to $60 more, or a total income increase of 40 per cent.

Bohemian Life Seems to Have no Ill Effects for These Chickens. They Thrive on Late Hours and Midnight Lunches.

Mistaken Impressions

Many poultrymen who were very much opposed to the new idea based a great portion of their arguments upon the impression that the hens were being "forced." However, nothing of this nature is involved. The hens are merely given a longer time in which to eat, which affords them a chance to strengthen their winter vitality. Of course there is the chance that the lights may be used with dire results, for the poultryman has before him a clear demonstration of the advantages of longer hours, and when the market price of eggs is high, the temptation is great to work the hens beyond their power of endurance.

The success which has attended practically all of the tests reported so far has resulted in a considerable display of interest by poultrymen who have always been quite skeptical. Problems in connection with the proper amount of light needed and the best time in which to use this light, together with the solution of difficulties encountered in finding a proper method of feeding, are under investigation at the present time. However, all the statements made by men prominent in poultry husbandry who have conducted tests similar to those described in this article, have lead to the quite general opinion that the idea will be generally adopted. And prospects for cheaper winter eggs are therefore very bright.

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When you build a barn you build it of the best lumber for that purpose. You do so because you want it to stand and give service.

That's why we use California Redwood in Pacific Silos—we build them to stay built and give you service all the time.

All staves are milled to the true circular outline of silo, both inside and outside. Each piece is chosen for its durability and permanency—is free from pitch, knots and other imperfections.

The foundation for a silo is a very important point. It must be perfectly level and strong. We will supply foundation plans for the Pacific Silo or will install it complete for you.

Pacific Silos are very simple and easy to build. Once built they stay built, need no attention and are not affected by changes of weather.

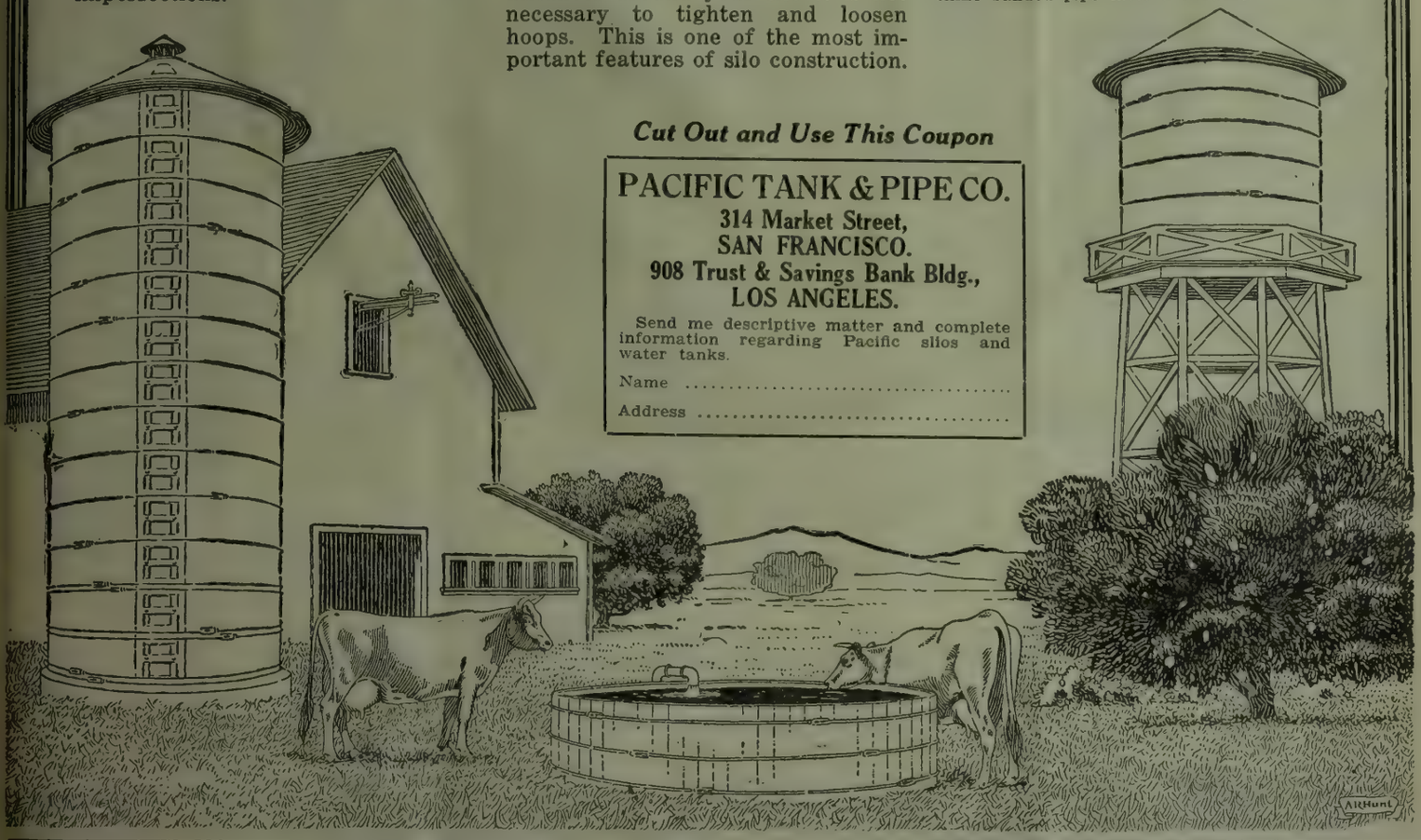
All Pacific Silos are fitted with self-adjustnig, straight-pull spring lugs. By using spring lugs at even distances around your silo it is not necessary to tighten and loosen hoops. This is one of the most important features of silo construction.

Solve Your Water Problem

Nothing adds so much to the efficiency and convenience of a farm as a water tank. It saves time, labor and money, and assures you of water all the time.

Pacific Redwood Tanks are built like Pacific Silos—strong and everlasting. Our patent non-shrinking feature does away with all chance of leakage. A Pacific tank is always tight—the hoops never need adjusting.

For your irrigation system or pipe required on the farm, let our engineers lay out your plans and solve your problems. Pacific machine banded pipe lasts a lifetime.



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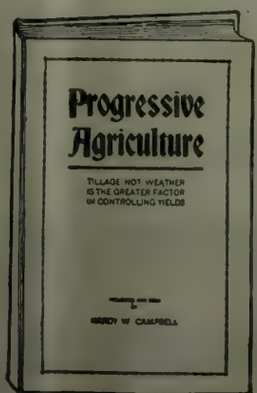

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August, 1919

A Magazine for the Lover of Growing Things

10c Per Copy

ORCHARD and FARM

ESTABLISHED 1888

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Mammoth Blackberries

Offices
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Helpful Hints for Every Food Producer

Every Bump a Collision!

Every Bump is a Little Collision in Itself

COMBINE the bumps your Ford is compelled to withstand in a year, or even six months, and you would have a collision that would tear it to pieces.

Just because you can't notice the injury day by day is no sign it is not taking place.

Prevent the effects of the bumps from reaching the vital parts of your Ford Car or Ford One Ton Truck and you will find a saving of more than one-third in the up-keep and tire expense. You also will find that at least fifty per cent has been added to its life and resale value.

Hassler Shock Absorbers afford this protection for every Ford. They absorb the "little collisions" before they get a chance to do their damage.

Hasslers are proving their worth on more than a million Ford Cars today. Look and you will see that one in every three Fords is now equipped with the Patented Hassler Shock Absorber. And while the saving is remarkable, yet a large percentage of Hassler owners purchased them because of their easy riding qualities. Any Hassler owner will tell you that the additional comfort alone is worth more than the cost of Hasslers.

We might also mention that gasoline mileage is increased; that steering is made easier, adding to the safety of the car; and that greater speed is made possible, giving more practical value to the car.

Hassler Shock Absorbers can be applied in a few minutes. They do not require marring of the Ford. There are two types; one for the Ford Passenger Car and another for the Ford One-Ton Truck.

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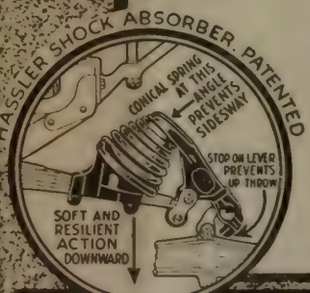

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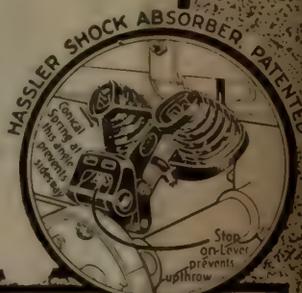

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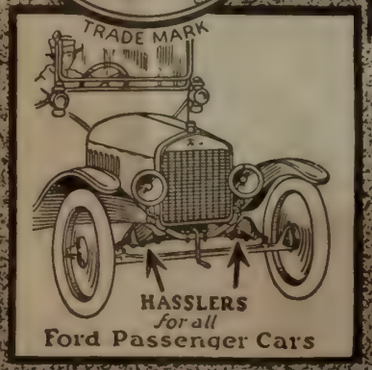

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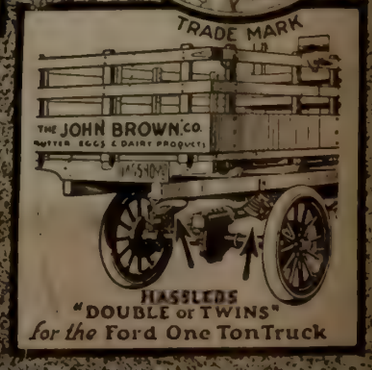

HASSLERS "DOUBLE or TWINS" *for the* Ford One Ton Truck

ORCHARD and FARM

VOL. XXXI. AUGUST, 1919 NO. 8

To Health and Wealth Via Avocado Avenue

"Avocado Avenue" is unquestionably a permanent highway, leading to all things desirable. Its dangerous turns are now plainly placarded. Pioneers have smoothed the way for fortunate followers, and hundreds of growers are following its seductive course towards what they believe to be a real land of promise. To the President of the California Avocado Association we are indebted for this comprehensive article, which shows among other things that a strong organization of growers is the best foster-parent for an infant industry, and that the avocado has well earned its title of "the aristocrat of the fruit world."

By Wm. H. Sallmon

(Written especially for Orchard and Farm.)

A PROGRESSIVE association consisting of more than 200 members; a sub-tropical fruit of great merit and promise—Could there be a more winning combination?

To the avocado and its enthusiastic advocates Southern California will owe an increasingly large share of her prosperity. During the past four years the Avocado Growers' Association, directed by a board of nine "live-wire" growers, nurserymen and scientists, has put this delicious fruit upon the map. Until their work began to be felt, avocado growing was on a par with other pleasant pastimes of the plant propagators, and had never been taken very seriously.

Avocado trees, started from seeds obtained in Mexico, Guatemala, West Indian and Hawaiian Islands, have flourished here and there in Southern California for the past 40 or 50 years. When some of these trees bore hundreds of fruits which found a ready market at a dollar each, men began to realize the possibilities for profit, and trees were planted by the hundreds and thousands.

But the avocado, like many other fruits, does not come true to seed and so it came about that varieties increased until some 180 were classified. Many of these varieties proved to be of little or no value. Then the nurserymen began to select, and propagate by budding, those which possessed the more favorable qualities, and in 1900 the first budded avocado trees were produced. During the following five years planting of trees and production of fruit increased so rapidly that it became apparent an infant industry was in the making, and a meeting of interested persons was called in 1915. Thus the California Avocado Association was formed, "to improve the culture, production and marketing of the avocado."

Origin and Description

This tropical or semi-tropical fruit, often miscalled "Alligator Pear," is not related to the pear family, nor can it possibly be associated with the alligator. It is probable that sailors who first saw the varieties with rough skin and pear-like shape, and to whom the native name "Alluacate" as used in Mexico and Central America, was difficult of pronunciation, adopted the name "Alligator Pear." But the fruit has been known in this country since 1896 by the name "avocado," an English adaptation of the native name, a word of pleasing sound and easy pronunciation, which has been adopted by horticultural organizations throughout the United States.

The fruit varies in shape from round to oblong and pear-shaped, in color from green to brown and dark purple, and in weight from a few ounces up to two or three pounds. It consists of an outer skin or rind, one large seed, and pulp resembling butter. In the better varieties this pulp possesses a delectable nut-like flavor. It requires experience to know when the fruit should be picked, as it does not ripen on the tree. In about one or two weeks after picking it mellows and when it yields to the slight pressure of the thumb like a good Bartlett pear, it should be eaten. It will remain in fit condition for consumption for only a few days after reaching this period.

The Avocado Association has published in its reports many recipes for preparation of the fruit. Victor Hirtsler, maitre de cuisine of the Hotel St. Francis, San Francisco, says: "There is not a course with which the avocado cannot be served, either in the raw or the cooked state, from cocktail to ice cream." For a cocktail, the flesh is cut into cubes, seasoned with tomato catsup, lemon juice, salt and pepper and served very cold in small cocktail glasses.

For ice cream, mashed avocado is added to the cooked custard and flavored with a little almond extract.

Not all avocadas are of good flavor. Many of the seedling fruits are watery and tasteless and some of the fruits of budded varieties are inferior. But the flavor of a good avocado is so fine and delicate that it should not be hidden with too many condiments.

The Sharpless Avocado

One of the eight varieties selected for their meritorious qualities by the California Avocado Growers' Association, and now one of the most popular types grown in this State.

In the countries of its origin it is eaten in the raw state. In Guatemala, where the avocado replaces meat in the dietary, the fruit is commonly cut in two and the flesh, sometimes sprinkled with a little salt, is scooped out with pieces of tortilla. For most palates a little salt, lemon juice or vinegar will be sufficient to bring out the natural flavor. The fruit is itself a natural mayonnaise and should never be eaten with an oily dressing.

Unusual Food Value

No one yet has done justice to the subject of the avocado as a food. In view of the evidence which has been accumulated it is not too extravagant to claim that the avocado is the most valuable fruit known to man. Wilson Popenoe, the agricultural explorer, after spending sixteen months investigating avocados in Guatemala, wrote an article on "Avocados as Food in Guatemala," published in the Journal of Heredity, March, 1918, in which he shows that the avocado is a major article of diet in that country. "Four or five tortillas, a good sized avocado and a cup of coffee—this we look upon as a full meal," indicates the Indian native's attitude toward the avocado.

Prof. M. E. Jaffa, head of the division of nutrition of the University of California, and his associates, have announced as a result of analysis and experiment that the avocado should not be considered merely as a relish, but as a food which builds tissue and yields energy. In this respect, the avocado, as a fruit, stands in a class by itself, ranking higher in fat or oil than the olive and so outranking even that fruit with respect to its total food values. Professor Jaffa says: "So far as protein and ash in fresh fruits are concerned, the avocado stands at the head of the list, and, with reference to carbohydrates, contains on an average fully 50 per cent of that found in many other fresh fruits.

The chief value of the avocado however, is in its high content of fat. This varies, as shown by the analyses (28 analyses of 24 varieties) from a minimum of 9.8 per cent to a maximum of 29.1 per cent with an average of 20.1 per cent. The claim is not made that the avocado combines in itself all the elements of a perfect food, but that it contains more of the essential elements yielding on the average a far higher caloric value than any other fresh fruit. As the supply of fruit increases and present high prices consequently decrease, more people will have an opportunity to test the merits of the avocado and instead of being a salad luxury it will take its place as an essential food.

Virtues of the Tree

The avocado tree is a thing of beauty. Internationally-known horticulturists have extolled its virtue in this respect. It is an evergreen with leaves somewhat like those of the magnolia. In its practical freedom from insect pests and diseases it is probably the cleanest fruit tree we know. It is a most desirable tree for the home garden as well as for commercial planting. Its habit of growth varies greatly and this should be taken into consideration in planting a single tree or an orchard.

The original Taft tree, 19 years old, has a spread of about 40 feet. The foliage of the Taft is a dark green with a reddish tinge on the new leaves in the spring, which is very attractive. The tree has a drooping habit and care must be taken to head out a central limb by propping. The Lyon tree grows tall and upright and makes an excellent orchard filler for interplanting. The Queen grows in pyramidal form, with lower branches resting on the ground and with rather open foliage, while the Fuerte is compact and with denser foliage. These examples, chosen at random, give an indication of the varying habits of growth in the avocado family.

At the present time trees are commonly planted from 25 to 30 feet apart, but it is clear that the time will come when every other row of certain varieties will have to be taken out in order to allow a spread from 50 to 60 feet. The original Chappelow tree, twenty-five years old, has a

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Keeping the "Overhead" Under Foot

How a Chicago millionaire, who found the "man" in manager, successfully operates an Oregon ranch, and how his agricultural diamond-in-the-rough is being made to pay for its own polishing.

By O. H. Barnhill

KEEPING the overhead expenses under foot is the watchword of Clyde E. Niles, manager of Riverbank Farms. As every business farmer knows, it is comparatively easy to show a profit on a single farm operation, such as raising a thousand bushels of wheat or producing a ton of pork, but when all the expenses of conducting a ranch for a series of years are taken into account it is a difficult matter to keep the balance on the right side of the ledger.

It is especially difficult when another man pays the bills, as in the case under consideration, for then there is an ever-recurring temptation to purchase needless equipment and to do things the easiest rather than the most economical way.

At his own request Niles receives part of his salary in the form of a share in the net profits on his agricultural operations. This serves as a self-imposed check to any possible extravagance or careless management. The plan is to be carried still farther. As soon as most of the development on Riverbank has been completed the entire working force will participate in the profits. Aided by the united pull of all employes, Niles hopes to bring down the overhead expenses to a point where they will cease to menace the net profits and can be utterly trampled under foot.

Cutting Tractor Expense

The use made of two tractors on Riverbank Farms—a 45 h. p. "Caterpillar" and a "Baby" 30—is an example of this implacable hostility to the overhead. These machines represent an investment of $8000. Interest on this large sum and a heavy annual charge of depreciation constitute a huge overhead which casts a heavy shadow over the manager's peace of mind. To bring this bugbear down where it could be reduced to negligible proportions was a difficult problem. After paying 16 cents a gallon for a good grade of distillate and 40 cents an hour for men to drive these mechanical horses, with other operating expenses proportionately high, the net profit on the work performed left little to apply on the overhead.

The solution of the problem was found in keeping the machines at work as much of the time as possible. They were hitched onto everything that needed moving, from plows and harrows to stumps and trees. They are used to clear and level land, dig ditches, plant and harvest crops. In the fall when the clayey soils become too damp and sticky for cultivation, the tractors are moved onto the sandy, silt soils, which can be worked in the wettest weather. The tractors were finally kept going from dawn till dark practically every work day in the year, except during severe storms. But even this did not satisfy Niles, for a large part of the overhead was still up in the air, clamoring to be taken care of. The machines were finally fitted with electric lights and kept grinding away during the night as well as in the day time, being in practically continuous operation. The constant throbbing of the motors is music to the manager's ears. When one of the tractors stops in the middle of the night Niles wakes up and wonders what is the matter, being unable to sleep again until the motor resumes its pleasant popping.

The manner in which the water supply is managed is another good example of Niles' hostility to the overhead. An elevated 10,000-gallon tank furnishes water for all the farm buildings. To keep this tank full formerly required the almost constant service of a pumping plant, which continually increased the overhead. To save this expense, a trench was dug into a spring at the upper side of a field and the water piped to the tank, which is thus kept filled automatically and without further expense. A drain-pipe from another and smaller spring not only dries up a bad bog but furnishes water to irrigate until midsummer the grounds around the buildings, which are grouped on three sides of a large square, something like a college campus.

Improved Irrigation System

Riverbank Farms, located at the confluence of the Rogue and Applegate Rivers, in Southwestern Oregon, carry a water right for 1400 of their 1800 acres. The few primitive ditches dug by pioneers are being replaced by a comprehensive canal system which will deliver water to every acre of cultivated land on the property. Before coming to Riverbank, five years ago, Niles was for years superintendent of the Rogue River Canal Company and other irrigation enterprises, and has, therefore, both a practical and a theoretical knowledge of irrigation problems, the solution of which he enjoys.

A huge pumping plant is being installed to force part of the canal water onto fields which are too high to be reached by gravity flow. The cement work is being done by employes when other work is slack, the gravel being secured on the land and the dry powder from a nearby factory. The fir posts used in fencing the farms will be gradually replaced by permanent cement ones made in a similar inexpensive manner, thus doing away with the costly necessity of replacing the wooden posts every five years.

Examples of "System"

Another item in the construction of the pumping plant above mentioned is characteristic of the manager's determination to let no chance escape to knock the props out from under the overhead. Instead of buying shingles to cover the roof he had the farm mechanic saw shingles out of Riverbank sugar-pine, using machinery which is employed most of the time for other purposes.

Still another good illustration of this kind of saving is found in the way in which the turkey problem was solved. Young turkeys are tender things and are supposed to require a great deal of expensive coddling. Niles decided they could take care of themselves better than any human agency could care for them; therefore they are given absolutely no attention or food, except for three weeks before Thanksgiving, when the gobblers are stall-fed for future feasts. Good fences protect the bronze birds from predatory animals and they find their own feed and shelter, thus reducing the overhead practically to the vanishing point, so far as the turkey department is concerned.

This is Niles of Oregon, who can't sleep if the tractor motors stop in the night and who takes his job just as seriously as though he, instead of his millionaire employer, were paying the bills.

Even the Sires Work

The farm stallion pays for his feed by working in the field most of the year and the herd bull obtains needed exercise on a treadmill while furnishing power to separate the creamery product of a half hundred contented cows. The dairy is at present one of the chief revenue-producers at Riverbank. The old dairy barn is located on low, wet ground, but plans are being matured for a new, modern structure on high land. Part of the yard will be roofed over to enable the milch cows to exercise during wet winter weather, without exposure. Each day the dropping will be covered with straw and in the spring a spreader will put the manure where it will assist in provender-production. Alfalfa hay will be chopped fine, in order to eliminate waste in feeding, economize on storage and provide greater ease in handling.

Having a farm managed by men who are hired by the month or year and who consider their jobs only temporary, possesses similar disadvantages to the yearly rental system. In both cases the workers, even if paid on a profit-sharing basis, are concerned only with present success and cannot afford to follow a system of agriculture which does not justify the initial expense unless followed for a long term of years, such as a soil-building crop rotation and the purchase of high-priced breeding stock. The proprietor of Riverbank Farms solved this problem by first proving the ability and integrity of his manager and then making the latter's position practically permanent. In case of the owner's death the estate will pass to his heirs and cannot be sold. Clifford M. Leonard's principal purpose in getting into the farming game being to provide a pleasant country home for his wife and children and to build up a business which will automatically support them after he has passed away.

On a Permanent Basis

With the interests of both owner and manager safeguarded in this manner, the latter is not forced to follow any short-sighted, hand-to-mouth policy, but can profitably buy high-priced equipment and breeding stock, make costly permanent improvements and adopt a system of crop rotation that constantly increases the fertility of the soil—very much the same as if the farm were his own and he were laying up old-age insurance. Cement posts, a $4500 tractor and a five-year (alfalfa) crop-rotation are examples of the agencies Niles is using. Another is the purchase of a $1000 Guernsey bull calf, which is insured for a like sum and which came 2000 miles to head the Riverbank dairy herd.

This may seem like an unwarranted expense, but the ancestry of the youthful sire, as well as his individual excellence, indicate that he will pay big dividends on his original cost. A knowledge of an animal's ancestry enables anyone with good judgment to determine with almost mathematical accuracy his actual cash value. If the mother of the calf in question does as well the next three months as she has the past nine she will hold the world's record for a cow of her age and class, producing over 12,000 pounds of milk and 600 pounds of butter fat. She is a three-fourths sister of a cow with a yearly record of 20,000 pounds of milk and 1019 pounds of butter fat.

Some big business men farm for fun, keeping their agricultural adventures in their list of liabilities, instead of among income-producing investments. Tickling the soil is their hobby and is classed as an expensive luxury like autoing or yachting. This is not Leonard's idea at all. There is something splendid in following the divine injunction, "Subdue the earth," and he enjoys co-operating with Dame Nature according to the most approved methods. To make two alfalfa plants grow where only a weed grew before yields a quiet joy which city life can neither give nor take away. But Leonard could derive no satisfaction from conducting a gainful operation in such a way as to lose money. He believes that arable land should be used to produce food in the largest possible quantities at the lowest possible cost. If an agricultural operation doesn't show a profit he regards it as a mistake and a failure—and he doesn't enjoy making mistakes and failures.

It was while building a two-million-dollar hotel at Portland that Leonard became interested in Oregon agriculture. But when he bought

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Weeds: The Bolsheviki of the Plant World

In last month's issue of Orchard and Farm Mr. Newman, Field Deputy for the State Horticultural Commission, explained why weeds have become a serious menace in this State. In this article he outlines approved methods of dealing with some of the more common weed pests.

By O. W. Newman

IN TWO PARTS—PART TWO

(Written Especially for Orchard and Farm)

WEEDS and Bolshevism are menaces with somewhat similar characteristics. We are all aware of the necessity of keeping down the anarchistic element threatening the welfare of the State, but few California farmers realize that in ordinary weeds they have an almost equally insidious enemy. A few weeds appear in a field, like shrunken-souled I. W. W. "organizers" in a community of peaceful producers. They scatter their seeds and before the owner realizes the situation, have "poisoned" the field, reduced or ruined its productivity and commenced to fight with each other for existence, without themselves producing anything for the advancement or welfare of mankind. What is this but Bolshevism?

HOARY CRESS (LEPIDIUM DRABA)

A perennial having a head of white flowers somewhat similar to a wild parsnip. The picture shows how a plant which has been cut off just above the ground sprouts and continues to grow. The long underground roots are shown.

The problem of weed control is a serious one in this State. The weed menace has now reached the point where the practice of agricultural economy calls for the most drastic measures, involving co-operative, concerted and systematic action from every vantage point.

Before one can undertake the scientific eradication of noxious weeds, however, he must know the life habits of such pests. Roughly, weeds are divided into three classes: Annuals, biennials and perennials.

Classes of Weeds

Annual weeds are those which sprout from seed, completing their growth and maturing new seed in one year. Such weeds are spread only by means of seed. Among the annuals are included such weeds as the Russian thistle, mustard and foxtail. If cut before the seed matures, such weeds can usually be controlled. The best time to eradicate them is before they are more than two or three inches high.

Biennial weeds or plants are those whose life cycle covers two years, such as bull thistle and wild turnip.

Perennial weeds live throughout an indefinite period of years, are the most difficult to eradicate, and include some of our most noxious pests. There are two general classes of perennial weeds: Those which grow from seed and from roots, and those which grow from seed and from rootstocks. A rootstock differs from a simple root in that it is designed to store food for the future use of the plant. It might roughly be called an underground stem from which grow branches, sometimes at a considerable distance from the parent stock. Johnson grass, morning glory and quack grass belong to the class of weeds which have rootstocks. Cutting these rootstocks with a harrow only serves to spread them farther, for each joint carries a supply of food which enables it to send out new roots and develop into a new plant. Failure to understand the life history of plants of this type has frequently been the cause for increasing rather than reducing weed infestation.

Weed Dissemination

Plants are propagated by seed and by cuttings, such as pieces of the root or stem. There are, however, a great many different ways in which they have modified their seeds and their vegetative parts in order to spread into new territory. Roughly, the agencies which enter into the spread of weeds may be grouped under four heads: Physical forces, such as wind and water; mechanical devices, such as explosive pods and gelatinous seed coats; vegetative reproduction, such as rootstocks or aerial stems; and animals or other foreign agencies. The seeds of water grass, Bermuda grass and many of the thistles are transported not only by the wind but also by water.

Irrigation canals are an enormous source of weed-seed distribution. Man is one of his own worst enemies with respect to weed infestation; he scatters unwelcome visitors by sowing impure seed, by failing to clean his agricultural machinery when through harvesting or threshing, by bringing sheep or cattle from one range to another with their hides "loaded" with weed seeds. Most of these agencies of weed distribution are absolutely within the control of the average farmer, and by exercise of the proper care losses attendant upon them can be prevented. It pays to buy the best seed on the market. Seed is not necessarily a bargain because it is cheap. Rice growers especially should be very careful to sow clean seed. Over 3000 acres of California rice land has been abandoned because of water-grass which was introduced in the rice seed. If we could impress the farmers with the importance of sowing clean seed, we would add thousands of dollars to the agricultural income of the State. The sowing of clean seed is the surest means of preventing the distribution and spread of Johnson grass, Canada thistle, morning glory and water-grass; to give this matter close attention is to manifest sound sense and the exercise of good judgment. It will reduce the spread of the pests we have and will keep out those we have not.

GROUND BURNUT (PUNCTURE WEED)

Because of the big, hexagonal, pointed seedpods this weed (Tribulus terrestris) is becoming a serious pest in some of the interior counties. Although an annual, it grows in a thick mat over the surface of the ground and produces a large quantity of seeds, which stick to everything with which they come in contact. The author has seen these seeds clinging to automobile tires two or three miles from point of infestation.

How to Fight Weeds

The principal methods used in the control of weeds are cultivation, crop rotation, the sowing of pure seed and the application of chemicals. Of these, perhaps, cultivation is the most generally used. Crop rotation, one of the most important factors in building up a good farm, is not sufficiently practiced in California. Although climatic conditions in certain parts of the State make somewhat difficult the practice of rotation, a careful consideration of crops that will grow in these sections will no doubt reveal many which could be used to the financial benefit of the farmer and at the same time accomplish the results desired in renewing the soil and removing noxious weed growth.

Chemicals have been used to a limited extent and under certain conditions are found to be quite practical. Prof. George P. Gray of the University of California, has stated that in the Coast regions arsenite of soda can be satisfactorily employed against morning glory. (The method will be discussed at another point in this article.) Iron sulphate has been used successfully to a limited extent in the control of wild mustard, but as yet it has been tried only in a few counties. The method of application is much the same as for spraying an orchard. One hundred pounds of iron sulphate in 50 gallons of water will cover an acre. The material should be mixed in a container and strained into the spray wagon. The most satisfactory nozzle is one of the Bordeaux type, throwing a flat, strong spray and capable of being easily cleaned. An ordinary power spray wagon can be equipped with a 12-foot rod in place of the hose generally used. Nozzles should be placed about 4 feet apart on this rod. The best time to spray for mustard is when the infested grain is about 8 inches high. At this time the young mustard plants are nearly all sprouted and are in the most susceptible stage.

Water-grass in Rice Fields

Water-grass (Echinochloa crus-galli), is one of the worst rice pests in California. It is found generally distributed throughout the State wherever there is sufficient water for its growth. It is especially abundant around horse-troughs and barnyards, and for this reason has been called "barnyard grass." In Farmers' Bulletin 688, United States Department of Agriculture, Charles E. Chambliss says:

"During the past three years this grass has taken complete possession

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COMMON PIGWEED (AMARANTHUS RETROFLEXUS)

An annual familiar to all of us. Such weeds produce an enormous quantity of seed; in order, therefore, to keep them under control, it is necessary to cut them before they reach maturity.

Avocados for Health and Wealth

(Continued From Page 3.)

spread of about 60 feet. Some trees are tender and easily withered by excessive winds, heat or cold. Some are disappointing in their slowness of growth. Some seedlings grow vigorously and promise well but after being budded lose their interest in life, linger on for a time unprofitably and then droop and die.

With all the risks attendant upon the business and with nursery stock selling at $2.50 to $10 each, the selection of trees is, therefore, of the utmost importance. The characteristics of an ideal tree are summed up by W. A. Spinks, one of our most successful growers, as follows:

"First, the tree should be strong, growing rapidly and in an erect form, able to withstand cold, wind and heat and bearing fruit when young. Second, the tree should be a true annual, bearing a full crop each year. Third, the tree should be able to hold its crop for months after maturity, thus enabling the grower to select his own time for marketing. Fourth, the tree should have abundant foliage to protect its fruit and branches from the sun and to add, by its ornamental beauty, to the joy of living and the value of property."

The most serious problem which has confronted this new industry was the question of varieties. With the number increasing until some 180 were listed, more than 80 of these growing in California, there would naturally arise confusion and hesitation with respect to planting. Growers of seedling trees which produced only passable fruit gave their names to the variety and propagated it. Nurseries were selling by the thousands stock, concerning the merits of which they had no real knowledge. Orchards were planted and later rebudded and top-worked, when the fruit proved inferior, with resultant disappointment, expense and loss of time.

The Avocado Association then took the matter in hand, calling to its assistance such experts as Dr. H. J. Webber of the Citrus Experiment Station and A. D. Shamel and L. B. Scott of the Department of Agriculture. After thorough investigation of fruits and trees the association approved a selection of eight varieties as the best and most reliable for commercial planting in California. This action was almost unanimously acclaimed and was immediately productive of beneficial effects. Planters began top-working and rebudding in accordance with the approved list and nurserymen discontinued carrying many varieties for which there was only an occasional demand. To apply the pruning knife to such a formidable list of varieties as existed was a delicate task calling for courageous performance. It was the most singular contribution which has been made towards the standardization of the fruit and the stabilization of the industry. The directors of the association have announced that the recommended list should not be considered as final but should be revised periodically and brought down to date to keep pace with advancing knowledge.

It may well be that some grower of a seedling tree will yet produce a fruit superior to anything yet known, but it is a tribute to the thoroughness with which the work of selection was done that, at the annual meeting of the association held in Pasadena in May, 1919, no change was suggested in the list approved in August, 1917. It is probable, however, that some of the varieties frequently mentioned in discussions will be included in the approved list when their merits are better known and some of these not included may be discarded if defects are established.

The varieties recommended for planting in California are Fuerte, Spinks, Blakeman, Lyon, for spring fruit; Spinks, Blakeman, Lyon, Dickinson, Taft for summer; Taft, Dickinson, Sharpless, for fall; and Sharpless, Puebla and Fuerte for winter fruit. These eight varieties practically assure a continuous succession of crops during the twelve months of the year. The essential characteristics of each of the eight varieties may be summarized as follows, provided, always, that attention is given to the explanations and modifications mentioned:

The Approved Varieties

Fuerte—Seasonal dates, January to August; average weight of fruit, 12-14 ounces; average weight of seed, 1.52 ounces; highest percentage of oil or fat, 30.72; shape, pyriform; color of mature fruit, green.

Spinks—Seasonal dates, April to August; average weight of fruit, 16-20 ounces; average weight of seed, 3.25 ounces; highest percentage of oil or fat, 16.46; shape, obovate to pyriform; color of mature fruit, purplish black.

Blakeman—Seasonal dates, April to August; average weight of fruit, 16 ounces; average weight of seed, 2.50 ounces; highest percentage of oil or fat, 17.27; shape, pyriform; color of mature fruit, green.

Lyon—Seasonal dates, April to August; average weight of fruit, 16 ounces; average weight of seed, 2.75 ounces; highest percentage of oil or fat, 16.31; shape, pyriform; color of mature fruit, dark green.

Dickinson—Seasonal dates, June to October; average weight of fruit, 12 ounces; average weight of seed, 1.36 ounces; highest percentage of oil or

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Napier Grass Gains Popularity

By H. C. Davis

INTEREST in the new forage-plant Napier Fodder (or Elephant Grass) is continually growing. Especially are stockmen watching the results of its introduction into various districts, with a view of making extensive fall plantings.

For August and September have been shown to be the best months for setting out cuttings in this State. Experienced growers recommend especially late August and early September planting. Some experiments have shown that rooted plants do equally well in spring or fall, but most growers agree that the joints of the stalks are best planted in these two months. Both methods of propagation are in general use, but little success has been met by those who have attempted to grow the plants from seed.

Fall plantings will be made not only with new cuttings purchased now, but likewise with joints from stalks planted last spring. Many growers who set out a few stalks in the spring find themselves with sufficient stalks to plant a large acreage this fall. One San Diego County rancher who started with 100 plants advises that he will have enough in September to set out more than seven acres! And by next May or June (to use his own expression), he expects to have "some" hay!

On Arizona Desert

An Arizona ranchman, A. A. Walsworth, of Casa Grande, met with such phenomenal success in growing the plants on his ranch, under irrigation, that he advises planting at intervals of 6 by 8 feet instead of 4 by 6, as recommended. He says that on good soil, where plenty of water is available, as is the case on his ranch, the plants will grow so large as to be too crowded if planted according to the smaller diagram.

One grower calls attention to the fact that the culture of Elephant Grass resembles closely the propagation of sugar-cane, and advises that by following the instructions contained in the Government bulletins on sugar-cane production, the Napier-fodder grower may obtain highly satisfactory results. He also states that Napier Fodder effectively will choke out Bermuda grass.

As a crop for ensilage, and also as a pasture plant, Napier Fodder, according to reports of farmers who have had experience with it in these respects, is highly satisfactory. One ensilage experiment has previously been mentioned in Orchard and Farm; that of H. L. Wagner, who made excellent silage from Napier Fodder last season on his ranch at Descanso, in San Diego County.

Another authoritative instance is cited by the University of Florida. Alfred R. Neilsen, superintendent of a large ranch near West Palm Beach, Florida, last season placed a few feet of Napier fodder in a silo between layers of sorghum. In feeding it out to stock on the ranch, Mr. Nielsen found that practically no difference could be noted in the relish shown by the stock for the two feeds.

As pasturage Elephant Grass has so far scarcely had a demonstration in this country, as it has been grown mostly on small experimental plots, and the plants have been allowed to mature for propagation purposes

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A Remarkable Stand of Elephant Grass (Napier Fodder)

This photograph was taken at the ranch of Mrs. F. E. Galbreath, Pixley, California, and shows the appearance of an established field of this wonderful forage-plant. Mrs. Galbreath, one of the pioneer growers of the grass in this State, asserts that the cane-joints generally used for propagation may be planted as soon as mature canes are available, August and September being the best months for planting.

Cost of Establishing Walnuts

DURING the past three years, when the cost of farm labor has been increasing steadily, along with the price of implements, seed, nursery stock fertilizers and other necessities on the farm, there has been considerable speculation as to the probable cost of planting a walnut grove.

This question is fairly answered by the California Walnut Growers' Association, which has just completed a survey in which fifty walnut growers, owning 3,000 acres of young trees, were interviewed. According to the figures thus obtained, the cost of buying and setting out trees in 1919 has amounted to from $15 to $50 per acre, the average being $28.40. With budded trees now costing from $1 to $1.50 each, the cost today would probably range nearer $50 than $15 per acre.

The annual cost of maintenance (on plantings of twenty acres or more) ranges between $10 and $50 per acre, including taxes. On plantings of from one to twenty acres, the annual cost ranges from $15 to $50, with an average cost of $37. The average on all plantings considered was $31. By the use of intercrops, however, this expense is frequently reduced to a negligible amount.

The annual cost of operating, including all expense such as irrigation, fertilization, cultivation, pruning, harvesting, taxes, etc., runs from $32 to $100 per acre, with an average of $61 for plantings of twenty acres or more. This cost increases as the acreage decreases in size. It is claimed that a safe estimate for business purposes puts the normal cost of operation between $40 and $60 per acre.

Marketing Cost Small

The average cost of packing and marketing is about one and one-half cents per pound or, based on a yield of 1,000 pounds per acre, $15.50 per acre. This item amounted to 5 per cent. of the selling price for the 1918 crop, or one and one-half cents per pound.

C. Thorpe, general manager of the California Walnut Growers' Association, states that there are commercial walnut groves in California which produce more than a ton of marketable walnuts to the acre each year. There are many, he says, which produce over 1,000 pounds per acre. The actual 1918 yield of fifty growers who were recently canvassed by the association was 1,300 pounds per acre for trees over 12 years old, and an average of 500 pounds per acre for trees from 7 to 12 years of age. A safe estimate for business purposes is from 900 to 1,200 pounds per year for each acre of mature trees, Mr. Thorpe says.

The walnut usually comes into bearing at from 5 to 9 years after planting. Association records give seven years as the time for profitable bearing. With good treatment a walnut tree will bear indefinitely, it is said. There are trees in France and elsewhere in the old world which are known to have been profitable producers for hundreds of years.

Many trees in California are producing bountiful crops at 60 years of age and over. Under proper cultural methods the older a walnut tree becomes, the greater is its productivity. In California the oldest trees appear to be the heaviest producers.

Interplanting and Intercropping

The interplanting of walnut groves in Southern California with deciduous fruit trees has been and still is practiced in some localities, possibly to the profit of the grower, but most likely to the disadvantage of the walnut trees.

Clean culture, combined with the use of winter cover crops, is believed by many successful growers to be the most satisfactory method of handling the soil in walnut groves. Such crops as melilotus indica, purple vetch and horse beans make good cover crops if properly handled.

These leguminous crops add nitrogen to the soil and improve its mechanical condition. The cover crop is usually planted just after the harvest and is plowed under to a good depth during the latter part of March or early in April. The soil should be well broken up with a disc and harrow, and kept in good tilth throughout the summer.

With the present practice of distant planting in vogue, intercropping is resorted to as a means of supporting the walnut trees before they come into profitable bearing and increasing the earnings of older groves.

Beans a Good Intercrop

In localities where beans do well they can be used with profit and satisfactory results as an intercrop. They usually yield well and, being a leguminous crop, add considerable nitrogen to the soil. Furthermore the bean roots and vines, when plowed under, increase the humus content of the soil and improve its mechanical condition. The cultivation given this intercrop improves the trees as well.

In the case of a strong soil, where plenty of irrigation water is available, intercropping with winter vegetables, such as lettuce and cabbage, has proved to be a desirable practice. The use of grains as an intercrop is absolutely unsatisfactory, according to Mr. Thorpe, and alfalfa, he says, is only to be recommended where abundant water is available for irrigation purposes. If alfalfa is used as an intercrop a wide strip of cultivated ground should be left between the intercrop and the trees.—Reece T. Blake.

Selecting Seed for Cover Crop

THE time is at hand when the orchardists and other farmers who intend to produce a cover crop during the fall and winter months, are asking for prices on the seed and making their reservations.

Undoubtedly the Yellow Blossom Melilotus Indica Clover, which has become so popular in California during the past few years, will again be the leading crop sown for cover crop purposes and, no doubt, there will be carload after carload of poor seed as well as good seed sold. In fact, it is stated by leading dealers that an unusually large amount of poor seed is on the market this season, different lots showing surprising variation in germinating tests.

The price of Melilotus Clover seed generally ranges from 7 to 12 cents per pound, depending upon the quality of the seed, as to germination and purity. The low-grade seed frequently has a germination percentage of only about 25 to 30 per cent, while the best seed will germinate 90 per cent or more; which should be the case with good Melilotus, sown under proper growing conditions.

Then again, there are grades of seed which sell at $8, $9 and $10 per hundredweight; but regardless of which grade is purchased, you can rest assured that you are only getting exactly the quality that you pay for. Every dollar taken off the selling-price means a certain percentage less in germination or purity; and not only that, but it costs just as much to ship poor seed as it does to ship good seed.

It costs just as much for time, labor, irrigation and cultivation to prepare your land for poor seed, as for good seed. Poor seed is expensive at any price.

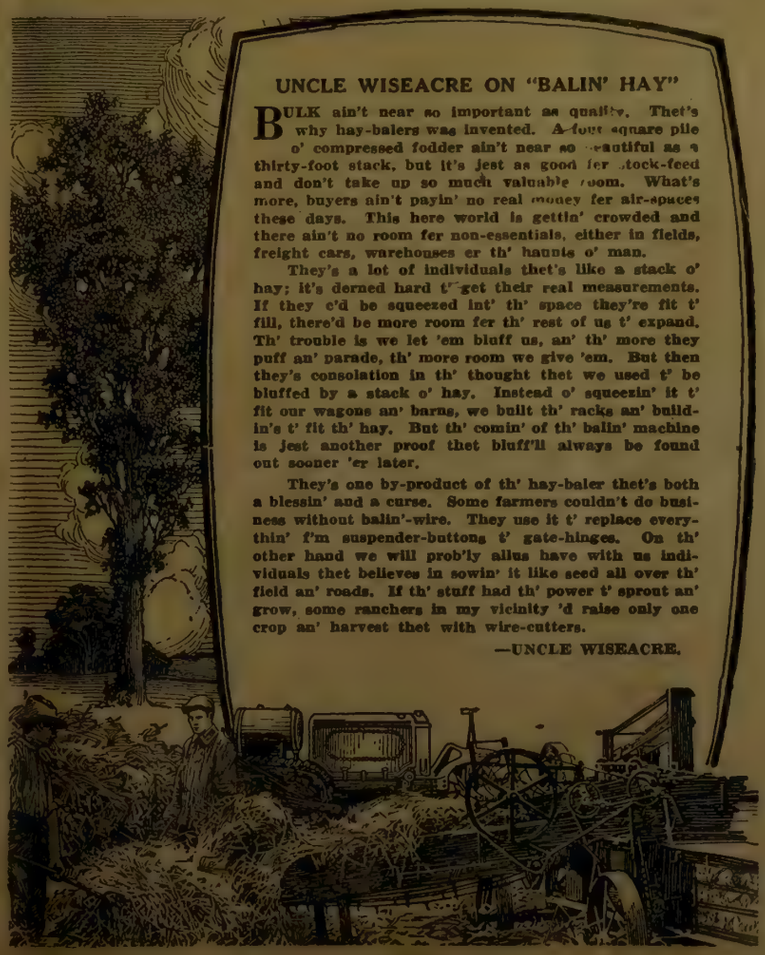
Seed Scarcity Impends

If it is your intention to sow a melilotus cover crop this fall, I would advise, by all means, that you place your order immediately so that you may take advantage of the early prices, as the seed never fails to advance in price as the season goes along; and, by all means, command the best. I am informed that, while there may be large quantities of the poor seed available, a shortage of the better-grade seed may be expected.

As I use a large quantity of this seed every season I am writing from experience, with the thought that a great many others will profit by it. When I am ready to purchase my seed I go to several of the leading seed houses and get their prices and samples. I then divide the samples, keeping half of each and sending half of each to the University of California at Berkeley, California, to be tested. Upon receipt of their reply, I compare the results and place my order for the seed having the highest percentage of purity and germination, regardless of price.

It is absolutely impossible to determine from the appearance of the seed, which lot is the best. For instance, last year I had two lots of seed which looked exactly alike, but there was a difference of 3 cents per pound in price. When I got my returns from Berkeley, I understood the reason for the difference. One germinated 40 per cent while the other germinated 91 per cent.

I immediately placed my order for the 91 per cent seed and I would have done so even if there had been a difference of 10 cents per pound in the price, because the results that I received from 51 per cent more germination were worth a thousand times more to me than the small difference in the cost of seed.—Fred W. Wales, Orange County orchardist.



UNCLE WISEACRE ON "BALIN' HAY"

BULK ain't near so important as quality. That's why hay-balers was invented. A four square pile o' compressed fodder ain't near so beautiful as a thirty-foot stack, but it's jest as good fer stock-feed and don't take up so much valuable room. What's more, buyers ain't payin' no real money fer air-spaces these days. This here world is gettin' crowded and there ain't no room fer non-essentials, either in fields, freight cars, warehouses er th' haunts o' man.

They's a lot of individuals thet's like a stack o' hay; it's derned hard t' get their real measurements. If they c'd be squeezed int' th' space they're fit t' fill, there'd be more room fer th' rest of us t' expand. Th' trouble is we let 'em bluff us, an' th' more they puff an' parade, th' more room we give 'em. But then they's consolation in th' thought thet we used t' be bluffed by a stack o' hay. Instead o' squeezin' it t' fit our wagons an' barns, we built th' racks an' buildin's t' fit th' hay. But th' comin' of th' balin' machine is jest another proof thet bluff'll always be found out sooner 'er later.

They's one by-product of th' hay-baler thet's both a blessin' and a curse. Some farmers couldn't do business without balin'-wire. They use it t' replace everythin' f'm suspender-buttons t' gate-hinges. On th' other hand we will prob'ly allus have with us individuals thet believes in sowin' it like seed all over th' field an' roads. If th' stuff had th' power t' sprout an' grow, some ranchers in my vicinity 'd raise only one crop an' harvest thet with wire-cutters.

—UNCLE WISEACRE.

New Fruit Book

Devoid of long-winded discussions, and crammed full of concise, well-arranged, practical information, the new book just published by George C. Roeding, widely known Fresno orchardist and nurseryman, has attracted much attention from all quarters where fruit growing is a live topic (and this includes most of the Pacific coast territory).

This "Fruit Growers' Guide," as Mr. Roeding has named his work, takes up not alone all varieties of fruit and nuts grown in this section, but also the various steps in their successful culture, from the selection of stock to the harvesting of the fruit and the care of trees of all ages.

Profusely illustrated with fine halftones, and printed upon heavy, glazed white paper, the book will make an attractive as well as very valuable addition to the library of any grower or student.

Fight on Grasshoppers

The destruction of grasshoppers through distribution of poison bran bait furnishes an example of a rather unusual situation in insect control; that of permanent and lasting effects from poisoning. In nearly every case where the work was thoroughly done last year, very few of the insects were found this year, due to the fact that fewer eggs were laid in the area treated. Observations made in Iowa showed the difference to be so great as to be noticeable even in adjoining fields.

Experiments with the poison bait in the Sutter Basin have shown that the addition of lemon juice to the bait makes it more attractive than the use of orange juice, and that the juice of the grapefruit is even more effective. It has been found, furthermore, that the bait is taken almost as readily when dry as when fresh.

The Mystery of Granite Mountain--A Short Story by Albert Constant Jameson

IN TWO PARTS—PART ONE

SHERIFF BENSON suddenly dropped his cigar, lowered his feet from the porch railing and sprang forward. The cloud of dust which had obscured the movements of a horse, just brought to a standstill before the hitching-rail at the store across the street, cleared away sufficiently to reveal a ghastly spectacle. No sooner had the foam-flecked animal stopped, swaying, with low-hanging head on unsteady legs, than two figures astride its back sagged simultaneously and fell into the arms of loiterers who sprang to their assistance.

Without hat or coat, his nickeled star gleaming on his vest, the officer rushed across the road and followed the crowd that surged up the stairway. One man had run ahead to open the door of the doctor's office, located above the store. Benson scarcely heard the quick questions and tense answers of the gathering crowd as he elbowed his way upward. He was the first to enter the room after those who carried the now unconscious riders.

Glancing quickly at the white faces of the two men, as they were laid carefully, one upon the couch and one upon the leather-covered examination table, he recognized them instantly. Even to one unacquainted with the injured men, it would have been apparent that they were brothers, so closely did they resemble each other. Enos and Fred Graves had come to Sandhills several months before and had since been employed by various outfits in that vicinity as cow-hands. While the doctor deftly stripped the blood-stained clothing from each, the Sheriff recalled that Enos was the elder of the two and noticed for the first time how much more slight and youthful in appearance was the younger brother, Fred. He slipped the revolvers from the holsters of the men and snapped them open. Each had been completely filled, but every cartridge had been exploded!

"Send for my wife," commanded the doctor after he had completed his swift preliminary examination. "You, Benson, bring me some warm water. Here, Lawrence, hold this." And he placed the knot of a deftly-twisted tourniquet into the hands of one of the men who had brought the patients in.

"This fellow on the couch; not so bad," he continued in jerky sentences, while he worked. "One bullet in leg; got blood stopped. Pretty bad wound in thigh there; mostly loss of blood. Younger lad's worse. Have t' operate; wife can give ether; bad wound in his neck. Gad, boys, he was hit five times and rode into town. Wonder how far they came. Both in pretty bad shape. Can't tell 'bout this one, yet. Older man there'll pull out; pretty bad mess; pretty bad!"

Sheriff Benson turned towards the door. "I'll deputize two men t' stay here, Doc," he said. "They will help you any way they can." He stepped out of the office. "Here, Jack, you and Joe Williams kin stay here and help Doc Kurman. Don't leave 'til I get back. Now I want two men with hosses t' go with me. All right, Mart. Come on, you and Johnson." And within a few minutes the three were riding swiftly towards the northern foothills whence the wounded brothers had come.

Chapter II

The doctor and his wife were soon at work in the operating room, adjoining the office, while two embarrassed helpers, hastily drafted into service, and swathed in white gowns, obediently if awkwardly followed the instructions of the surgeon. At length the physician rolled down his sleeves, washed his hands carefully, buttoned his wilted collar, pushed his rumpled hair back from his forehead and sat down rather limply in his office chair. The patients, each in a white cot, lay side-by-side in the so-called "ward" constituting the "hospital" at Sandhills, while Mrs. Kurman watched for their return to consciousness. Still heavily drugged with ether, the younger brother had scarcely moved, but with the rest and relaxation strength was returning to the less seriously wounded man. His lips moved faintly and the watching woman correctly interpreted his wish, for she detected a grateful look in his ashen face as she gently raised his head and gave him a sip of cool water. He closed his eyes a moment; then opened them again and looked steadily at his nurse. She bent close to his lips and was able to distinguish his question spoken scarcely above a whisper: "How's my brother?"

"He is better, too," she said with quick reassurance. "Don't worry. Go to sleep."

The doctor's wife spent the entire afternoon with the patients, but on the night train, in response to her husband's telegram, came a trained nurse from the city to take charge of them, and finally, almost faint with weariness, she returned with the doctor to their home. In her hand she carried a small, flat paper parcel, and when they reached the house she opened it.

"See, dear," she said, "here are some papers I took from the boys' pockets. I thought Mr. Benson might want them when he returned. And here are a couple of photographs, one from each coat pocket. Very strange, isn't it? They are exactly alike." She handed the leather folders, identical in color and size, to her husband. He held them under the shade of the table-lamp, the better to examine their contents. Each held the picture of a young girl; comparison showed them to be of the same subject, although in slightly different poses, and the face was one of exquisite beauty.

Chapter III

After following for several miles a dim and wind-blown trail of hoof-prints and occasional blood-stains, the Sheriff and his two companions finally drew rein at a desolate spot in the shadow of a rocky hill, known locally as Granite Mountain. Dropping their bridle-reins, they examined a spot where the loose soil had been trampled and stirred.

It was apparent that a horse had been suddenly halted and wheeled on the spot and that the rider had held it tightly to rein while it reared and plunged. There were deep pockets, where sharply-driven front hooves had bitten into the sand, and a confusing jumble of lighter prints and streaks where four active equine feet evidently had drummed in a small circle for several seconds.

And, yes, there was the tell-tale spot of blood—several spots, in fact, as the man whom the Sheriff had addressed as Johnson soon pointed out excitedly. While Johnson sought further traces of the battle, the Sheriff's eyes shifted quickly to a widening circle. Shading his face with his hat, he looked finally almost into the glaring sun, now setting close to the horizon. Then he walked rapidly westward, where a hundred yards away, he halted before another trampled spot in a depression where it had at first been invisible.

Close inspection revealed a somewhat different story, however, than they had deducted from their first find. Bloodstains were plentiful; in fact, there was one, especially, which led to the belief that not only the man but also the horse had been injured. And this conjecture was strengthened by discovery of the plain imprint of the animal's body where it had rolled in the sand. Then, evidently, the horse had struggled to its feet and run madly away from the spot into the heavier brush to the north. There were also a number of irregular foot-prints, made with a heavy boot.

"Huh," mused Bronson, "——duel. First shot brought down th' kid's hoss. Fought th' rest of th' time on foot. He was at a disadvantage in two ways, boys. Caught in this low spot here, y'u see. Other feller shot f'm his hoss and got him in th' neck. This must 'a' been th' younger brother, Fred, then; he was the worst hurt, y'u remember. Enos, bein' on th' hoss, on high ground, got his in th' legs an' thighs. An' they both emptied their guns! Thet must a' been some fight, boys. But how come these two brothers t' open up at each other way out here in this fersaken hole an' fight t' kill? They ain't never displayed no bad blood before, has they?

"An' th' funny part of it is, th' older one musta' boosted th' kid ont' his saddle after he like to 'a' killed him, an' then climbed on behind and come on int' town. By crackey, did ye ever hear of anythin' like that? Now why would Enos help th' kid ef he was tryin' t' kill him? And how did it happen thet they rode in t'gether after shootin' each other up? Boys, this is sure a strange case. But ye'll have t' hand it to 'em both fer grit; they rode five miles, bleedin' as they was, an' never keeled over 'til they reached th' doctor's office."

His soliloquy was interrupted by the hitherto silent member of the party whom he and Johnson had addressed as "Mart."

"Thet was th' kid's hoss they rode int' town," he drawled.

"Thasso?" queried Benson quickly. "That's strange. Couldn't 'a' been Enos thet was shot on foot in the holler, there, fer his wounds was low down. It must 'a' been th' hoss Fred was ridin' thet was shot down. I have it! They must 'a' traded hosses fer some reason before they come t' this spot an' started their argyment."

"I never knowed 'em t' do that before," replied Mart, quietly.

"Well, thet ain't t' pervent 'em f'm doin' it this time, is it?" irritably demanded the officer.

But Mart did not answer. Apparently occupied with his own thoughts, he was scanning with his keen eyes the dim trails that wound in and out among the greasewood and boulders on the near-by hillside.

Both men, however, turned quickly at a call from Johnson, who had taken advantage of the interval to follow the trail of the injured horse. At the invitation of his beckoning hand, they approached the spot. There lay the body of the animal, dead from a great wound in the neck. It had plunged but a short distance before falling in its tracks.

"That's Enos' hoss, and I never seen him ride to town on no other," stated Mart, laconically. The Sheriff did not deign to reply. Johnson loosened the trappings from the body of the dead animal and carried them to where their own horses were standing.

"Guess I'll ride on over to th' ranch, Sheriff, if it's all right with you," said Mart, as they prepared to mount. "Gettin' late and it'd be outa my way to go back t' town. I'll be in again soon."

Benson, frowning, merely bit the end from a cigar and nodded curtly. Johnson took his seat, and reaching down for the saddle and bridle which he had taken from the dead horse, swung them easily to a place before him. Just as they turned into the main road he glanced back. Mart, leading his horse, was picking his way along one of the hillside trails, scrutinizing the ground keenly, as though in search of some lost object.

Chapter IV

The weeks rolled by and still the people of Sandhills apparently approached no nearer a solution of the mystery which had long held their interest to the exclusion of all other topics. Wild rumors that grew more imaginative with each repetition, circulated among the townspeople and the surrounding ranchers. The Saturday afternoon loiterers in front of the postoffice, in the pool-hall and on the veranda of the hotel, never tired of discussing from all angles the absorbing case.

Who was the beautiful girl whose photograph each brother had carried? What sort of argument or quarrel had preceded the exchange of shots on the desolate sand-flats at the base of Granite Mountain? Why had the brothers apparently shot to kill and then ridden together to town? How had the younger and more severely wounded lad happened to be riding his brother's horse before the fight?

There was no inclination to doubt Sheriff Benson's hypothesis; he was regarded as an efficient officer and it was known that his deductions were usually correct. In fact, there was seemingly no other theory to accept; for the brothers would not talk. From the day when they had been placed, one at Death's door and the other in serious condition, in the hospital cots, until now, when they were permitted, while convalescing, to stroll at will about town, no word had escaped the lips of either that would in any way assist in solving the mystery of their strange adventure. Later, a court scene that made the legal investigators appear ridiculous, had discovered no clews and brought forth no explanation from the lips of the two men. Throughout their long illness, they had been almost inseparable, seemingly finding their greatest pleasure in each other's company.

Neither would turn accuser; apparently their brotherly love was of the deepest and most sincere nature.

(Continued on Next Page.)

Has Romance Gone Out of the Golden West?

Must we now depend entirely upon the "movies" to perpetuate the stirring scenes and picturesque characters of frontier days? Some there are who assert that the men and events we associate with the early history of this, the land-of-great-spaces, exist only in the fertile imaginations of the motion picture directors. Such prosaic persons will be interested in knowing that although Mr. Jameson's story takes us back a few years, it is based upon an actual and recent incident, reported in the daily papers of California not three months since. With this foundation of fact the well known writer has woven into his brief narrative enough quick action and tense interest to satisfy even the most blood-thirsty admirer of our fire-eating screen stars.

Therefore, there was no criminal to try and no crime of which to accuse anyone. The Sheriff's position became every day more intolerable. The brothers had always been well liked among the people of Sandhills; had always minded their own business, paid cash for what they bought and maintained a friendly attitude towards all with whom they came in contact. And now, because of their apparent devotion to each other and their mutual unwillingness to divulge the secret locked within their hearts, as well as the bravery and fortitude they had displayed while recuperating from their wounds, they had completely won the hearts of the people.

Benson was continually twitted about his "prisoners," who although technically in his custody on a far-fetched charge, had ever since their removal from the hospital, been allowed to move about unguarded. And in truth, he had no excuse to hold them, other than his stubborn unwillingness to admit defeat in his efforts to obtain from one or both the complete story of the strange encounter.

Benson's ill-humor was heightened by the attitude of Mart, who had not returned for several days after the discovery of the dead horse and telltale marks in the sand, and who discussed the case in a guarded manner whenever he had occasion to talk to the Sheriff.

"What in hell are you driving at?" snarled the officer one exceedingly hot afternoon when Mart let drop some characteristic remark, which he found extremely irritating. "Ain't th' whole thing as plain as th' nose on yer face? Ef you'd spent yer time tryin' t' figger out some way t' make them two boys talk, you'd be helpin' me a lot more than by continually attemptin' t' cloud th' issue. Now if we could jest find out who that girl was! Th' photographer that took th' picters over in Carson City has left th' country and can't be located. What's more, nobody there remembers ever seein' this girl. She must 'a' been jest visitin' there. If we could find her, we'd make them boys open their mouths."

Mart gazed into space, as though turning in his mind some very weighty problem. "I never knowed them two t' trade hosses since they bin here," he drawled in his soft voice.

"There you go on that line again. What has that got to do with it?" snapped Benson, dropping his feet from his desk-top to the floor with a bang. "Ain't it clear t' yer shrunken intellect thet it must a bin th' kid thet was ridin' the injured hoss, and finished th' fight on foot, else how would he have got all his wounds high up, while th' other feller on th' hoss, was shot low-down? Couldn't they have traded hosses fer some reason? That ain't no obstacle, is it?"

"They act powerful friendly-like fer fellers thet tried t' kill each other," parried Mart, still in his peculiar soft drawl, the while he studiously trimmed his horny finger-nails with a huge pocket-knife. "Seems funny Enos 'd shoot th' kid while he was on foot an' then help him int' town when he could hardly ride hisself.

"Them boys seem t' be very fond o' each other. An' th' people likes 'em, too. I tell you, Benson, you better let up on yer persecution o' that pair; election time is comin' on an' it's makin' you mighty unpopular. There's some angles o' their case thet you ain't been able t' explain. Why don't you let th' matter drop?"

At first snorting with impatience and scorn, then dropping his surly manner, and rising grandly to his full height, the officer placed his big hand condescendingly upon the shoulder of the shorter and stockier man. "Mart," he said, "when you have tracked down as many criminals as I have, you will know that in the heat o' passionate anger, a man may be insane and not accountable fer his actions. Them brothers fought t' kill but has agreed t' shield th' girl. But I'm goin' t' find out th' truth about this affair if it's th' last official act of my office, and don't you fergit it!"

Setting his heavy jaw, he pulled his wide-brimmed hat lower over his eyes. "I said I would solve this puzzle, whether there was any prosecution er not, an' by crackey, I'm jest stubborn enough t' do it. I've got special agents in other counties workin' with me; they're liable t' unearth somethin' any minnit. Every county officer in this country has a copy o' that picture. And I may surprise some of these fellers thet has been goin' around laughin' up their sleeves—if I locate the girl. Men thet will shoot each other under such circumstances 'll commit crimes agin' society; we may fasten somethin' on them two brothers yet. They come here under mysterious circumstances, an, they bin mighty close-mouthed about their affairs ever since. Hello, there's the phone. Might be one of them special agents, now."

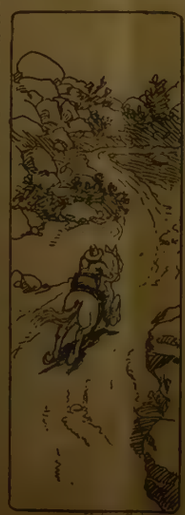
Mart started to leave the room, but halted as he detected the elation which marked the officer's excited conversation.

"What's that," he heard the Sheriff say, "Jennings, at Summit? Yes? What's that? You've seen her?—seen th' girl?——"

Mart did not wait to hear more. Quick as a flash he slipped out the door, around the corner of the building, and was gone.

When Benson, having finished a lengthy conversation, turned to address him, the look of excitement and pleasure on the officer's face gave way to one of astonishment, so silently and completely had the man disappeared. He did not waste time in conjectures, however, but started off rapidly towards the group hanging around the hotel on the corner. "Where's Enos an' Fred?" he inquired.

"Seen 'em goin' over t' th' livery stable," answered one of the loiterers, staring in astonishment.



Benson turned, crossed the dusty street at a run, and approached the stable.

"Lookin' fer yer prisoners, Sheriff?" inquired the tender.

"Yes, Enos an' Fred; where are they?"

"Why, ain't yu released 'em yet?" asked the stable-boy, with mild astonishment.

"Released 'em! Hell, no! Where are they, I said."

"Why, why—— I thought sure yu must a let 'em go. They was on their honor, wasn't they?"

"Honor be damned. Where did they go?"

"Why they come over here a few minutes ago and got their own hoss an' rented another, an' went over th' hill like a streak o' lightnin. They must be three miles f'm here. now, Sheriff. I thought——"

But Benson, cursing savagely, did not wait to hear what the stable-boy thought.

(Continued on Page 32.)

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We have prepared a pamphlet giving the name of every ingredient used in its manufacture, the analysis of it and why you cannot afford to make it yourself. Clip the coupon and mail. A copy of this pamphlet, also a copy of the new feed law, will be mailed to you immediately.

Besgrade Dairy Food not carrying this new tag has been manufactured previous to this date, but analysis is the same as shown on tag or in pamphlet.

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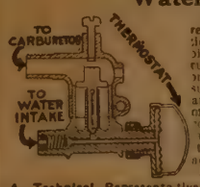

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Sensible Garden Suggestions

By Charles L. Schufeldt

THERE is satisfaction in the thought that one wave of enthusiasm which inundated the country during the war shows no signs of receding. This is the home-gardening movement. It is not difficult to explain why interest in gardening continues to run high. Garden-making has a real fascination that increases with every season, as the gardener becomes more and more proficient in the art. And as long as food prices continue to be high, families will endeavor to diminish their living expenses by growing vegetables.

Still, there are many would-be gardeners who do not realize that successful vegetable-growing calls for expert knowledge; in fact, one occasionally meets with ignorance which is almost laughable. I had occasion recently to visit a city back-yard, where an unsuccessful gardener showed me the blasted fruits of the family labors.

Some Display Ignorance

"Things simply will not grow here," she said. "Why, I water them every day, and yet, see how stunted they are. The plants that do appear above the ground are eaten by insect-pests. I guess we will have to give up the idea of gardening until we find a place where the soil is good and the pests not so numerous."

When I asked how she had planted the potatoes, she said: "Why we dug holes in the ground with a trowel and placed the pieces in them." It seems she had expected to loosen up the soil after the plants had started to grow! Tomatoes and beans had been planted in hard soil and then sprinkled religiously every day. Asked what insect had done the damage, she replied that it must have been cut-worms, snails or potato-bugs. I feel quite sure she would not know one from the other.

Of course this is an extreme case. Most of the existing apathy towards gardening may be traced, not so much to failure in making things grow, as to disinclination on the part of various members of the family to eat the different vegetables. One day I visited a little girl who had become interested in gardening. After making some suggestions and demonstrating how the soil should be prepared, I found her very anxious to proceed. Her mother, however, did not seem enthusiastic.

"There is no need of her planting carrot-seed," was the contention of the mother. "The family won't eat carrots." Similarly, chard, spinach and endive, mentioned as excellent greens, were tabooed. Even string beans were "turned down." In fact, it finally developed that green peas, green corn and potatoes were the only vegetables this family would eat.

Vegetables Are Healthful

This case is, unfortunately, typical of hundreds of our families. And there is really no excuse for such a situation. The notably poor "American digestion" may, no doubt, be traced to our national tendency to subsist mainly on meat, potatoes, bread and pies. Vegetables are healthful, nutritious and cheaper, as a rule, than other foods. They should be eaten in large quantities by every family. And it is a very easy matter to cultivate a taste for all kinds of vegetables. Any adult who has been allowed, from childhood, to follow a "notional" diet, and then has learned to eat many things formerly thought distasteful, knows how easy it is to change one's ideas in this respect. If various vegetables, prepared in an appetizing manner, are regularly served on the family table, it will not take the members of the family long, if they really try to learn to eat them, to become very fond of variety in their diet. Not only lower grocery bills, but better health most certainly will result when such a reform takes place, and the improvement in health will be especially noticeable, if the entire family helps in the making of the garden.

Too many farm families do without gardens. It is surprising to know that in many districts a larger proportion of town and city residents than farmers raise home gardens.

There is just as much spare time to make gardens in back yards, on vacant lots, and in the garden space on the farm as there ever was. Usually the space would be growing nothing except perhaps some grass or weeds unless it were utilized for a vegetable garden. Ordinarily, too, the time spent in the garden takes nothing from the total earning capacity of the family. Often, in fact, it adds to efficiency in the regular occupation by furnishing a healthful diversion or, perhaps, recreation, if the regular work be indoors.

Fresh Produce Best

In order to be fully appreciated, vegetables must be fresh. In the case of green corn, dietitians claim that the depreciation in sugar content is marked during the first twenty-four hours after it is picked. There is also considerable loss in delicacy of flavor. Green peas lose their flavor and much of their food-value during the first forty-eight hours after being picked.

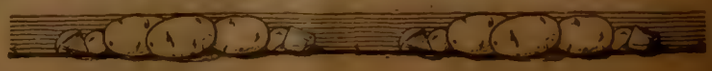
Market gardeners select varieties of vegetables which keep well and ship well. These varieties are very often not the most palatable. By wise selection for the home garden, superior quality can be obtained.

It requires a greater degree of intelligent application to make a successful "variety" home garden than it does to produce most field crops. Farmers often leave the garden to the women and children, or neglect it entirely.

However, farm gardens are rapidly increasing because farmers are realizing that the same area in garden truck will ordinarily produce more than ten times as much food as the staple farm crops. A well laid out garden in which a horse and wheel hoe are judiciously used, does not require nearly as much extra labor as its production would justify.

In cities, the gardens require more labor, and the labor would be expensive if it had to be taken out of the time of regular employment. But whether regarded as a business proposition, or as a means of obtaining healthful recreation, the garden has come to stay.

Water can be held in soil for a long period of time if top soil is always loose and if weeds are kept out, but soil packed at the surface soon gives up its moisture, and weeds are inevitably robbers.



Lore for the Little-Lander

IF a sprinkler is used, in the garden, have one that throws a fine spray in the air like rain, and leave it in each place until you are sure that the water has penetrated the soil to a depth of a foot or more and filled the soil-spaces.

Lay six seeds in a row touching each other the short diameter of the seed. Their combined width is the depth to plant if the soil is moist. Plant very small seed a little deeper, large seed a little shallower. Plant deeper in sandy soil; more shallow in heavy soil. Plant deeper in hot weather than in cool.

Garden seeds planted in properly-prepared soil do not need sprinkling or irrigating until after they have germinated and show well above ground. Such plants as corn and beans should grow in moist soil for a month or more before needing water if soil is in proper condition when planted. Frequently a crop is matured without watering after planting.

Put manure deep into the soil. Decaying manure and vegetable matter form humus to feed plants, and insure uniform moisture-content.

How to Prepare and Tan Rabbit-Skins for Furs

Kill at proper time when fur is thick and glossy. In warm weather, kill in early morning. Keep hair clean and do not cut or tear pelt.

Hang rabbit on hook by hind legs. Cut skin carefully around first joint, taking care not to cut flesh. Run knife down skin on inside of each leg to vent; loosen carefully and strip off pelt, inside out. Cut off feet at first joint.

Slip a smooth, thin board, cut to proper size and shape, inside the pelt (with fur in), being careful not to stretch the pelt much. Rub carefully all over with cheap salt. Place in shade to dry.

After curing, clean pelt carefully. Outer or first skin must be removed along with the fat. Do this a few hours after salting, if possible, rather than after skin is thoroughly dry. Use a blunt knife or chisel. Work from tail to head and from left to right, until all flesh is removed.

After cleaning the pelt, lay it away where moths cannot get to it until ready for tanning liquid. Before tanning, soften skins by washing in luke-warm water, cleansing them thoroughly with soap. Rinse and wring out dry and place in tanning liquid, made as follows: Water, one gallon; salt, one quart; saltpeter, two ounces; sulphuric acid, one-half ounce. Bring to boiling point to dissolve the salt, and add the sulphuric acid when the mixture has slightly cooled (luke warm). Use while warm.

Some skins require more time to tan than others. Test the work by pulling a piece of the pelt over the finger. If it is white and soft the process is completed. Twenty-four to 48 hours may be sufficient. Some may require 10 days.

Wring the skins out of the bath and wash again in luke-warm water. Then wring again and hang up until partially dry. Then they must be pulled, shaken, rubbed and kneaded until perfectly dry and as soft as a glove. The fur should be brushed and combed until fluffy and light.

Poultry Pointers

Sudden changes in nature or quantity of feed are inadvisable. Do not suddenly change from fine chick feed to large grains. It is better to feed considerable whole grain, but work up to it gradually, by using hulled oats, small-cracked corn and wheat.

Experienced poultrymen insist that it is better to pay $4 for one pullet of laying age than $2 each for two, provided the bird selected is the product of a reliable breeding establishment.

Many young chickens are killed by the feeding of too rich a mash. More than six per cent of beef scrap in the mash involves danger if fed before the youngsters are three months old.

Chickens never wash, as many birds do, but cleanse themselves of insects by wallowing in soil. For this reason every poultry house should be provided with a dust box.

Sorghum grains should be carefully and rather sparingly fed to young chicks.

Old Rubbers Dangerous

A Home Demonstration Agent reports that she was called into a home to see what was wrong with some peas that had recently been canned. The peas seemed a perfect product when first canned but in a few days became cloudy and began to spoil. On investigation it was found that the housewife had used rubber rings left over from last year. The only way to be sure of success in canning is to use good products, good jars, good covers, and good new rubber rings.

Cash Prizes Total $136

The second Orchard and Farm Contest for Helpful Hints is now under way. In just six months, prizes will be distributed to 26 fortunate subscribers, as follows:

First	$25
Second	20
Third	15
Fourth	10
Five prizes (each)	5
Seven prizes (each)	3
Ten prizes (each)	2

Write us about any time or money or labor-saving method or scheme which has made your ranch more productive or your management more efficient. Write us about your experiments and conclusions with fruit, poultry, field crops, livestock, garden or, in fact, any branch of food production. Tell what you did and how you did it. Send photographs or diagrams if they will help to tell the story; they are not required, however. We want plain, unvarnished, straight-from-the-shoulder facts that will hold inspiration for other readers and help them to make more money and improve their living conditions.

Write on one side of paper only, and sign name and address plainly. Any number of contributions accepted from each contestant. Articles limited to 1000 words, but the shorter the better, if you tell the whole story.

Address Editor, Orchard and Farm, Examiner Building, Los Angeles, and mark your letter "For Helpful Hints Contest."

The best contributions will be printed. All will be examined at the end of six months by a committee of competent judges, authorities on different branches of agriculture, and checks will be mailed to the winners, whose names will be announced in the issue following.

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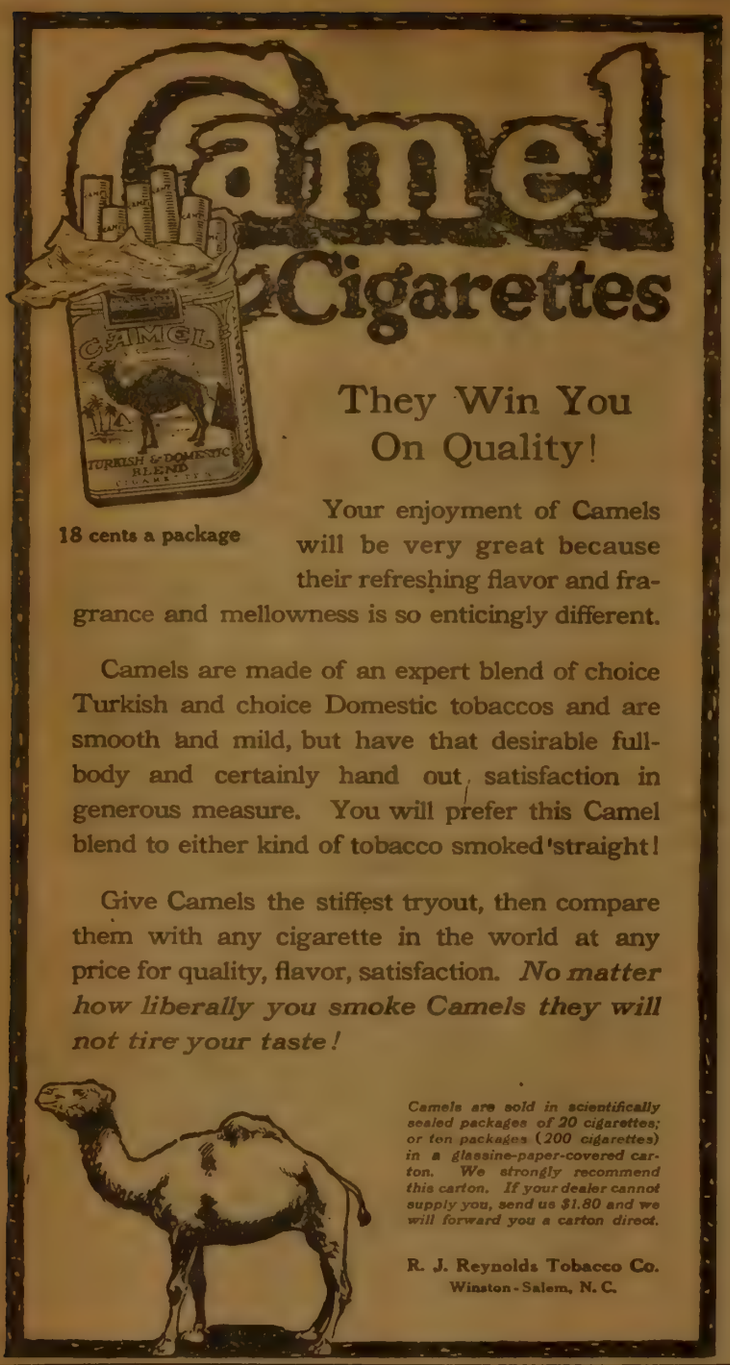

Hutches or Runs for Rabbits?

A subscriber recently inquired as to the advisability of raising rabbits in opens runs instead of in hutches, where they were closely confined. Although more expensive, the open system has many advantages and may well be considered by any rabbit fancier. Here are given the experiences in this connection of a rabbit authority and breeder of long experience.

By Mrs. C. A. Richey

RAISING rabbits on the ground (in yards or "runs") is no doubt the ideal system. It is especially a good way to handle young breeding stock, as they get plenty of exercise, and how they do enjoy themselves! It is great fun to watch them jump and frolic.

My own experience in the use of open yards was very encouraging, as breeders raised this way were never sick and acquired a splendid length of body, fine fur and a bright, alert appearance. My yards were about 10 by 12 feet, 8 feet high, covered with chicken wire, two-inch mesh, which extended a foot or two under the soil, to prevent digging out. Small mesh wire was added all around, from the ground to a height of two feet. A small rabbit can get through the large mesh, if not with his whole body, at least his head, with consequent danger of hanging. Lath instead of wire over the top of the runs makes a semi-shade that is very advantageous. I also use grape vines and blackberries for shade, but did not like the berry vines, as they grow through the wire and are very disagreeable for the person caring for the rabbits. I found the grapes by far the best, and they shed their leaves in winter, allowing the sunshine to penetrate when it is needed.

Construction of Shed

Inside the yard I had a little shed with a floor of laths on "one-by-threes," nailed far enough apart to let the droppings through. There was also a twelve-inch board two feet from the floor, and some boxes. This gives the youngster places in which to hide and climb. A twelve-inch board placed square on edge, across the run at about its center, over which they must jump every time they run across the yard, tends to develop length of body.

A large hay-rack, a crock for water, and a long trough, made so they cannot get into it or turn it over, completed the equipment.

Such an arrangement furnishes room for 20 to 30 youngsters and all may be fed with one opening of the door and one filling of feed vessels, instead of the handling of so many hutches.

We placed the rabbits in the yards as soon as taken from the mother, first dividing does from bucks and marking each one in the left ear with a certain mark or number corresponding with the same number in a book, giving parents' pedigree, winnings, etc. They were then placed in their yards until old enough to breed, does and bucks far apart, as the bucks fight terribly when they can see the does.

The bucks often have to be watched, as they will disfigure each other when they fight, and sometimes cause serious injury by biting. The does are not so vicious, although occasionally they also will fight. In the case of the does, however, the trouble may usually be traced to just one agitator, and peace restored by her removal.

Have the rack for hay arranged so it can be filled from the outside. Ground must slope so the rains will run off. If the runs are on level land, fill them in with dirt from outside. Rabbits know enough to stay in out of the rain. One time we had a flood and I went in their yard, in water almost to my knees, and carried my bunnies to a dry place. We did not lose one; they had all staid up on their shelves and boxes.

Rabbit Warrens

A rabbit warren is a fenced enclosure, where a number of rabbits are placed to breed and kindle as they wish. I have never heard, however, of a successful application of this idea. There are many reasons why the scheme would not be successful, as the does would breed so young and often that the progeny would become small and weak, and this is a situation to be avoided if possible.

I have planned, in my mind, an octagonal rabbit warren, or circle of yards, starting from a center where each yard would have a little house and nest box. Each yard would widen from the center, which would be accessible to the attendant. There one could clean and examine the nest boxes without going into the yards. Such a yard would have to be covered with a shed roof and would be quite expensive, but the rabbits would certainly be a healthy and happy lot, and their care very simple indeed.

I believe all the ordinary rabbit ailments are caused by continually feeding dry food, such as grain and hay, and confining the animals under the most unnatural surroundings in such close quarters.

Swat Poultry Shirkers Now!

THERE are two classes of farm fowl—those that are parasitic on flock profits, and those that are profitable. To bounce the boarders from the flock and encourage the increase and betterment of the profitable biddies are tasks of basic importance which confront every poultryman. With feed high in price and poultry products correspondingly valuable, it is of maximum significance to get rid of the worthless and increase the worthy birds in every farm flock.

Culling serves three purposes. It insures that the feed will be consumed by the profit-producing hens. It makes it possible to save those best suited for breeders, both because of their better production and their superior strength and vitality. (These characteristics enable them to stand up under the severe strain of heavy laying.) It provides more room by thinning out the slacker hens.

Culling should be continuous throughout the year. It should include the habit of weeding out, when discovered, any hen which is sick, very thin or emaciated, or which shows evidence of non-production, weakness or poor vitality. The entire flock should be given a careful and systematic inspection and culling once a year, and preferably several times.

The hens should be handled individually and gone over carefully with the object of separating the workers

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from the shirkers. From the class of better producers it is desirable to pick out as many of the best as will be needed for subsequent breeding. These hens should be banded or otherwise marked, so that their eggs may be saved for hatching purposes. The inferior fowls should be marketed as soon as possible.

When a single systematic culling is made, the best time for such work is in August or September. Then it is easier to form a close estimate of the value of the hen as an egg producer, as well as to weed out the unprofitable birds. Hens which show indications of laying at this time are those which on the average have been the better producers for the year. It must be remembered, also, that the better producers during the first laying year are those which will be the superior yielders in subsequent years.

The Age Limit

Hens showing indications of having been good producers throughout the year should be retained for the next year regardless of their age, but relatively few hens will prove to be profitable producers beyond their second laying year if they are of the heavier breeds, such as the Plymouth Rock, Rhode Island Red, Wyandotte, or Orpington; or beyond their third laying year if they are of the lighter breeds, such as the Leghorn. Additional culling during July is also desirable in order to eliminate hens which have started to moult and have stopped laying.

In culling the flock remember that it is safer to depend upon the agreement of a combination of several characteristics than to select by any one alone. With this in mind cull out hens that are sick, weak, lacking in vigor, inactive, poor eaters, molted or molting; those with small, shriveled, hard, dull colored combs; with small, puckered, hard, dry vents; with thick or coarse, stiff pelvic bones, pelvic bones close together, small spread between pelvic bones and rear end of keel, and full, hard, small abdomen. In breeds with yellow skin and shanks, the discarded hens should also show yellow or medium yellow shanks and yellow beaks.

Save hens that are healthy, strong, vigorous, alert, and active; good eaters; not molting or just beginning to molt in September or October; with large, moist vents; with large, bright red combs; thin, pliable pelvic bones well spread apart, wide spread between pelvic bones and rear end of keel, and large, soft, pliable abdomen. In breeds with yellow skins and shanks, the hens saved should also show pale or white shanks and pale or white beaks and vents.

A ration that is shown by analysis to be well balanced and to contain all the nutrients necessary for the maintenance of a fowl does not necessarily constitute the best feed. If it is not palatable, the birds will not eat heartily of it. Palatability is an important consideration in feeding. Fowls will sometimes secure more benefit from a ration of less feeding value than from the one showing extremely good analysis. The reason for this is that they will eat more of the feed that is tasteful to them.

If ducklings are raised under hens it is advisable to confine the hens and allow the ducklings free range, as the hens are apt to wander too far away with their broods.

Built for Country Roads

What the Patriot Did at Walla Walla

A few weeks ago a big Farm Power Demonstration was held at Walla Walla, Wash., attended by about 40,000 people. At this Demonstration Patriot Trucks were the *only* rear-driven trucks that went over the hills in plowed ground under full loads.

In fact, the performance of the Patriot over plowed ground, rough country roads and mountain trails was so wonderful that the International "Movie Man" followed it with his camera, and Patriot Trucks were featured in motion pictures all over the country.

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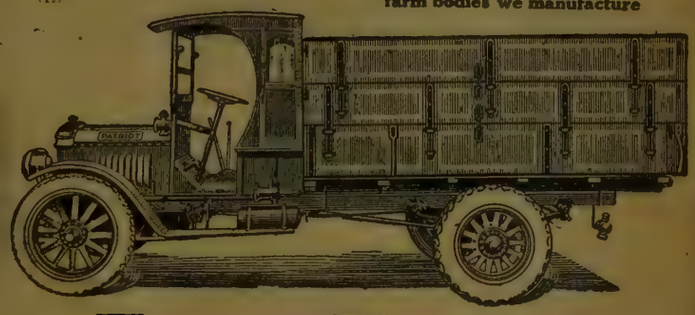

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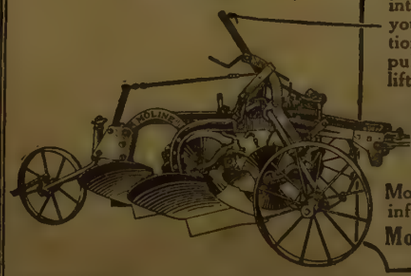

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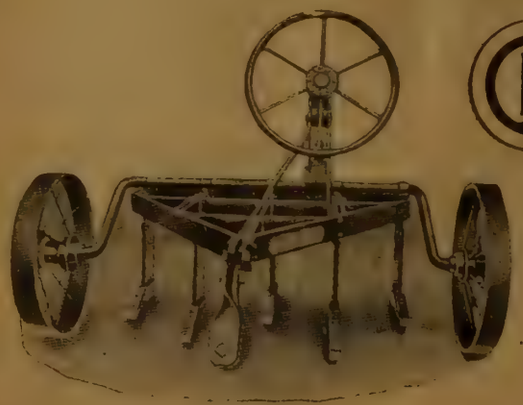

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Our Subsoilers and Chisels are all made from high-grade plow steel specially rolled for our purpose. When you buy a "Killefer" you can count on its durability to stand the work. Write for our booklet on "Deep Tillage vs. Old Methods" and see what has been accomplished by those who have used our Subsoilers and Chisels.

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2209-21 Santa Fe Ave. Box 156, Arcade Station, Los Angeles, Cal.

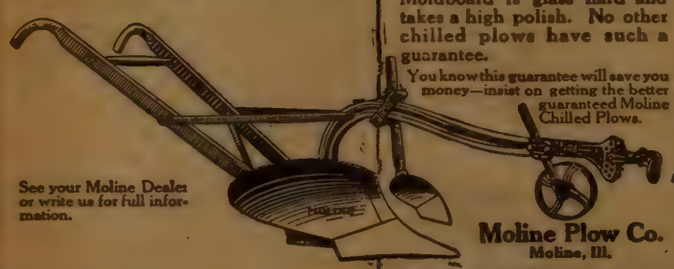
MOLINE CHILLED PLOWS

With a Money-Saving Guarantee

We will replace, free of charge, f. o. b. factory or branch house, on receipt of broken parts, any Moline Chilled Moldboard, or Moline Malleable Frog, broken in actual field use.

We can do this because Moline Moldboards have a soft, tough, greyback, which resists shocks and strains, yet the face of the Moldboard is glass hard and takes a high polish. No other chilled plows have such a guarantee.

You know this guarantee will save you money—insist on getting the better guaranteed Moline Chilled Plows.



See your Moline Dealer or write us for full information.

Moline Plow Co.
Moline, Ill.

Is Your Farm For Sale?

If you have a farm for sale or trade, livestock, machinery, implements, vehicles, poultry, musical instruments, nursery stock, building material, new or second-hand goods of any kind, dogs, rabbits, motorcycles, bicycles, automobiles, sewing machines—in fact, anything you wish to sell—advertise it in Orchard and Farm. Don't delay, but mail the ad you wish to run at once.

ORCHARD AND FARM
Examiner Building, Los Angeles.

THE SELF-OILING WINDMILL

has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load.

We make Gasoline Engines, Pumps, Tanks, Water Supply Goods and Steel Frame Saws.

Write AERMOTOR CO., 2500 Twelfth St., Chicago

In the Shadow of Coming Events

The various shows and exhibitions held during the war were conducted under serious difficulties, augmented by the "flu" epidemic. With these difficulties out of the way, however, and with farmers, generally, very prosperous, it is confidently predicted that this year's exhibitions will be the greatest ever held in the State. Below is given a list of important events so far scheduled, with fixed or tentative dates:

Haywards—Haywards Chamber of Commerce and Alameda Co. Farm Bureau	Aug. 8-9-10
Ventura—Ventura County, Secretary, L. P. Hathaway	Aug. 13-16
Sacramento—California State Fair, Secretary, Charles W. Pained	Aug. 30-Sept. 9
Petaluma—Egg Day	Aug. 31
Los Angeles—Tractor Demonstration	Sept. 16-21
Ferndale—Humboldt County Fair, Secretary, W. S. Moore	Sept. 16-18
Lancaster—Antelope Valley, Secretary, R. B. Cameron	Sept. 17-20
Hanford—Kings County Fair, Secretary, Frank C. Russell	Sept. 22-27
Napa—Napa County Fair, Secretary, E. P. Locanini	Sept. 18-20
San Diego—Agricultural Fair (date not definitely set) about	Sept. 25
Orland—Glenn County Fair, Secretary, A. E. Kirk	Sept. 29-Oct. 4
Fresno—Fresno District, Secretary, C. G. Eberhart	Sept. 30-Oct. 4
San Francisco—California Industries and Land Show, Secretary, E. H. Brown	Oct. 14-19
Brentwood—Contra Costa County Farm Bureau	Oct. 4
Tulare—Tulare County Livestock Show, Secretary, R. C. Sturgeon	Oct. 6-11
Martinez—Contra Costa Stock and Land Show	Oct. 6-12
Riverside—Southern California Fair, Secretary, W. W. Van Pelt	Oct. 7-11
Los Angeles—Livestock Show, Secretary, C. R. Thomas	Oct. 18-26
Santa Rosa—District Fair (date not definitely set)	October
Visalia—Citrus Fair (date not definitely set)	November
San Francisco—California International Livestock Show	Nov. 1 to 8

The Great San Francisco Land Show

According to the Home Industry League, the greatest aggregation of California agricultural and horticultural products ever presented will be shown at the Exposition Auditorium, San Francisco, October 4 to 9.

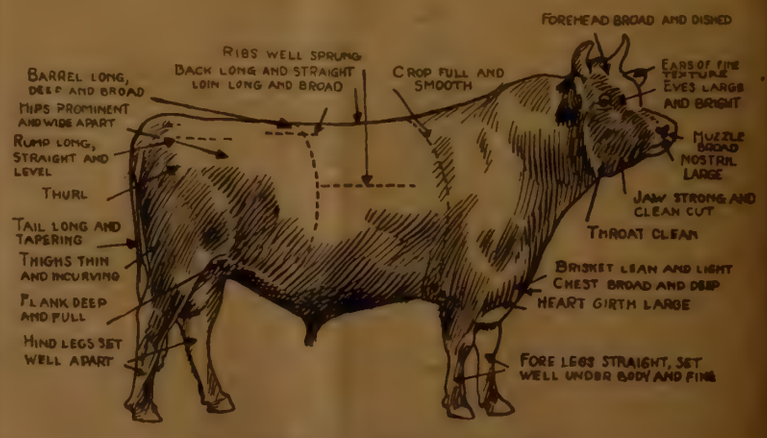
The occasion will be the first annual California Industries and Land Show, to be given under the auspices of the Home Industry League. The exhibits will be made through the counties, fifteen of which are already lined up for the event. Many others have promised participation.

Los Angeles Planning Big Things

Recognizing the paramount importance of things agricultural, the city of Los Angeles, which is planning a series of fall and winter entertainments, to be concluded with a great "fiesta," has arranged for a big livestock show, to be held at Exposition Park, October 18 to 26. According to C. R. Thomas, manager, enough entries have already been promised to assure the success of the enterprise, and prominent business men of the Los Angles district have agreed to underwrite the expense. The premium lists will shortly be ready for distribution. Cash premiums amounting to $33,000 will be offered. The show will include all kinds of pure-bred stock, with special classes for draft and saddle horses, mules, jacks, ponies, goats, poultry, pigeons and rabbits. The classes will conform to State and county fair standards. For entry blanks and full information, address C. R. Thomas, Chamber of Commerce Building, Los Angeles.

The San Francisco International Livestock Show

Not in the least discouraged by last year's misfortune attendant upon the epidemic and other factors, the management of the San Francisco Livestock Show is planning to stage an event that will live in livestock history. The board of directors recently announced that Prof. Gordon H. True, head of the animal husbandry division of the University of California, had been tendered and had accepted the position of secretary and manager. This is conceded to insure the success of the undertaking. Professor True is well and favorably known among all the livestock men, not only of California but also of our neighboring States. He was formerly connected with the Arizona University and later with the Nevada College of Agriculture. The date of the show has been set for November 1 to 8.



The Points of a Good Dairy Sire

While a knowledge of breeding and the records of dams for several generations back is considered essential in the selection of a sire to head the dairy herd, such a study will usually result in the choosing of an animal (no matter what the breed) possessing the general characteristics noted in the above diagram. These points may, therefore, safely be used as a partial criterion for selection. Breeding alone does not always make a herd-builder.

Napier Grass Gains Popularity

(Continued From Page 6.)

However, one Florida farmer, whose experience with it covers a period of about two years, and who has several acres planted to this new crop this season, writes:

"With us, it is easily the king of all grasses. I have fed it to cows and horses, and they liked it from the start. I have a mule that has the 'mulish' habit of finding the best feed on the farm, if possible, and when he can get to the Napier Fodder he passes up all other grasses. I now have several acres and expect to feed it quite extensively this fall. I shall feed it in connection with Japanese cane. The cane will be the finishing feed for cattle and hogs, but as it is not a balanced ration, I shall use the Napier to help out. With velvet beans, Napier, and Japanese cane, I expect to finish cattle and hogs easily and cheaply."

Superior for Pasture

This man's experience has demonstrated to him that, if properly handled, Elephant Grass will make excellent pasturage. In fact, he expects to devote his crop this year entirely to that purpose. He says: "I find from observation that if the grass is not pastured closely, but allowed to grow three or four feet high, and then not too closely cropped, it will stand continuous pasturing. My intention is to pasture it exclusively. It 'suckers' when pastured off, and this keeps it coming on all the time. This makes it produce a wonderful amount of feed."

In some parts of Florida, as in certain locations in Southern California, Elephant Grass can be expected to continue green throughout the winter, thus adding greatly to its value as a soiling and pasture crop. However, as with all plants, it must have its dormant period when production will be very low. Of course the yield per season will be far greater than the average where the growing season is long and there is little frost.

> *Napier Fodder Resembles Sugar Cane*
>
> *in some respects, especially in the manner of propagation. Those who experiment with this grass will derive help from the Government Bulletin on the Growing of Sugar Cane for Syrup, Farmers' Bulletin 1034, which may be secured free from the Division of Publications, U. S. D. A., Washington, D. C.*

Professor Thompson of the Florida Experiment Station writes, concerning the production of this crop: "Where conditions are favorable, there seems to be no other crop that will excel it in the production of green feed. Enough has been learned to justify the belief that Napier Grass will produce more tonnage per unit area than any other forage crop known to grow in Florida. One test made at the University of Florida within the last year yielded at the rate of 19.5 tons to the acre. Another planting made at a different time, and under somewhat different conditions, gave a crop weighing at the rate of 39.1 tons of green feed to the acre. These results were obtained as a first crop, from newly broken, good pine land, without fertilizer. In these tests the canes were allowed to mature to be used as seed canes, and the harvest was limited to a single cutting. A considerable increase in the total yield for the season might be expected, if the usual practice of cutting two or three crops a year were followed."

In connection with the above account, it might be mentioned that Professor Thompson reports no cases where Florida-grown Napier Fodder has reached more than a height of twelve feet at maturity, while in several well-authenticated instances, as stated by Professor P. B. Kennedy of the University of California Forage Crop Investigations, this fodder plant last season in Southern California reached a height of from five to seventeen feet and more at maturity. In reckoning the possible yield per season, Professor Thompson also mentions two or three cuttings per season, while twice that many cuttings have already been demonstrated as feasible in Southern California. And reports have been given in Government reports from New South Wales, Australia (having a very similar climate), showing that five cuttings in a single season were made at one agricultural college, the season's tonnage being given as at the rate of 60 tons of green feed per acre!

It is certain, however, that although the feeding qualities of Napier Fodder are thoroughly established, the figures for the average yield per acre to be expected under ordinary field conditions have not as yet been determined. One reason for this is the remarkable adaptability of this crop, which thrives with equal sturdiness, though with varying production, under widely differing conditions. On this point Professor Thompson says:

Very Adaptable

"Napier Grass is not as exacting in its soil requirements as are many of our better known forage crops. It seems to be about equal to Japanese cane on its ability to grow successfully on a wide range of soil types. In general, any soil that will produce good yields of Japanese cane may be expected to grow satisfactory crops of this grass. In both South Africa and New South Wales, where it is grown as a cultivated crop, it thrives comparatively well on rather poor land, though it responds to increased fertility. This tendency has been observed in its behavior in Florida, where it has proved itself able to grow on soils of only moderate fertility. But, like most other heavy-yielding crops it succeeds best on good, rich soils."

Professor Thompson also points out the fact, as has Professor Kennedy of the University of California, that Elephant Grass is essentially a warm weather plant, since it is a native of the tropics. He says: "As Napier Grass is of tropical origin, it succeeds well during hot summer weather. It also makes good growth during the autumn season, but the canes will be killed back by the first frost."

This quality is of importance from both the feeding and cultural standpoints. The advantages of an abundance of succulent feed late in the season are self-evident to every farmer. From the angle of propagation it is an equally fortunate quality. For Napier Grass can be propagated with success at any time during the growing season, if given enough water to establish the young plants. Indeed, it may be planted, where it is at all possible to get water on it, at a season after all other crops are in the ground. This makes greatly for convenience on the farm.

Established plants show a marked resistance to cold, and, being well rooted, will take advantage of each warm day in early spring. Newly set plantings, on the other hand, will not root in cold, wet soil, and do not make satisfactory progress until warm weather has arrived.

The advantage of a long planting season as well as a long growing season will aid in the rapid introduction of Napier Fodder into all sections of this country. Once demonstrated in any locality, it immediately arouses the interest of all farmers and stockmen in that section.

"JUST WHAT I WANT"

Is what almost every farmer says when I explain to him PERSONALLY the wonderful characteristics of my ranch-raised, hardy

Napier (Elephant) Grass

(World's Most Promising Forage-Plant.)

But I cannot talk personally to each of the thousands of readers of Orchard and Farm. Therefore, I take this means of urging every farmer who needs more and better feed for any class of livestock, to place his order with me at once for cuttings for fall planting.

NAPIER FODDER, in a few years, will be the leading forage crop in the semi-arid Southwest. Don't be among those who wait until next year to make a start with it. I say this as one farmer to another. I own and operate ranch property in California and Arizona and have dealt with hundreds of other ranchers who have found me fair and square and business-like. Give me your order and you will not be disappointed. Full directions will accompany each shipment of stalk-cuttings.

REMEMBER, my cuttings are ranch raised. They will positively thrive on your own land and, if cared for as directed, will soon produce enough stalks to plant a large acreage.

Largest, Finest Stock in America.
Large Orders a Specialty.
Best Bank References.
PRICES:

1 dozen	$1.00
100	5.00
1000	40.00
3000 or over	$30 per 1000

SEEING IS BELIEVING.
See Elephant Grass Growing
at
130 South Malabar St.,
Huntington Park,
Los Angeles,
Cal.

MRS. F. E. GALBREATH,

Pixley, California

(Pioneer Grower, Importer, Propagator.)

NAPIER (Elephant) GRASS

EUGENE J. SPENCER

The first and largest producer of Napier Grass in California, who raised and sold over 180,000 joints at Los Angeles in the past year, and will have 4 times that amount ready for market by August 15.

Two-year-old clump of Elephant Grass growing from one joint.

Urges you to send in your orders now for August and September planting.

PRICE OF JOINTS:

$1 per dozen
$5 pr hundred
$40 per thousand, or $30 per 1000 in lots of 3000 or over.

Can also furnish "Root Plants" NOW at $1.00 per dozen or $5.00 per 100.

ADDRESS EUGENE J. SPENCER, 610 East 54th St., Los Angeles, California.

EDITORIAL DEPARTMENT

Cheerful Chat Among Farm Folk

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things: looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.

Antiquated Measurments

FIVE years ago few farmers displayed any interest in problems having to do with world trade. Imports and exports of agricultural products were left to professional dealers, with foreign affiliations. Then came the world war and the suddenly increased foreign demand for our products of the soil. American food-producers were quickly awakened to the importance of overseas markets.

No thinking farmer, especially if he be a member of a co-operative marketing association, can fail to see that the new era must vitally affect his business. And through his association, the producer is now able to reach out into the foreign field, and to study and take advantage of situations that were formerly as a closed book to him. This broadened outlook is but a single instance in the rejuvenation of agriculture. "The narrow farmer," a stock phrase for many years, and illustrative of the isolation and limited vision of the average American food-producer, will soon become an archaic expression.

The "new agriculturist," then, is interested not only in all the broader national questions of the day, but also in those dealing with foreign trade. He may, therefore, be counted on to lend support to the laudable campaign being conducted by the World Trade Club of San Francisco, for the adoption by the British and American people of the simplified system of weights and measurements almost universally used in Europe, and commonly known as "meter-liter-gram." Our "foot-bushel-pound" system is admitterly cumbersome and confusing, especially in view of the fact that the European system is used almost exclusively in scientific literature and computations.

The study of chemistry, as carried on in our Agricultural colleges, and forming, in fact, the foundation for our agricultural courses, is based upon the meter-liter-gram system. In order, then, for the younger generation of farmers the more readily to apply their scientific lessons to their everyday business, they should be spared the necessity of making comparative calculations.

There is really no excuse, in fact, other than that of established precedent, for continuing to use the antiquated system with which we are all familiar. And in this progressive age, precedent should furnish no serious obstacle to the adoption of improved standards.

From Washington down, our best statesmen and economists have advocated the metric system; but it has been casting pearls before Congressmen only able or willing to think in terms of gallons of molasses, bushels of corn and pounds of fat pork. They, and all of us, may as well accept the system, because the exigencies of trade shortly must force it upon the country.

On Your Guard!--Vicious Rumors Afloat

THAT the severe criticism which was directed against the Federal Farm Loan Banks from many quarters during the early months of their organization has almost entirely subsided is regarded with considerable interest and satisfaction by Orchard and Farm. We believe that even the few farmers who formerly felt they had good reason for berating the local bank are broad-minded enough to recognize early mistakes as only natural developments in launching a totally new and untried enterprise. Basically, the Federal Farm Loan system is true and good; the idea behind it is sound; the benefit to agriculture is great.

Therefore, we can laugh up our sleeves at the statements of such interests as are represented by the American Farm Mortgage Bankers' Association, which, according to W. H. Joyce, president of the Berkeley Land Bank, is seeking to discredit the banks and to have the tax-exemption feature of the bonds repealed. It is only by selling the bonds on this tax-free basis that the banks are able to loan their funds to the farmers at such reasonable interest rates.

Removal of this feature, therefore, under existing Federal tax laws, would be to destroy the one vital support that keeps the entire structure from tottering.

The banks are not, as is erroneously claimed, loaning funds from the public treasury. They are dependent for their very existence upon the moneys raised from the sale of these tax-free bonds. It is not difficult to understand, therefore, why selfish interests, which have exploited the farmers for years, should select this vital point for the concentration of their vicious attack.

Far-sighted, broad-minded agriculturists, who hold the welfare of their calling first in thought and deed, will be on their guard to counteract such insidious propaganda, and will trace to their source and verify or discredit all rumors or reports seeking to condemn the Federal Land Banks. The banks offer the first and only substitute for the old, cut-throat method of making private loans. They were founded upon the idea of helping the farmer to help himself.

The system is not infallible; the officers are human and likely to make mistakes. But the farmer who, even unwittingly, assists the enemies of the Land Bank system by passing on as "gossip," unsubstantiated reports, becomes at once his own enemy.

Ben Reveals Himself As a Financier.

"SEEMS like when a feller needs money the worst, right then is th' hardest time t' scrape up any," mused Ben Gonnadooit rather bitterly. He continued studiously to cut notches in the top board of his gate, balancing his weight carefully in order not to break off what was left of the one remaining hinge.

"Ef I'd only knowed th' farm bureau was holdin' a auction sale this week, I might 'a' consigned some of my shoats an' brought in enough t' pay th' interest on thet note that's overdue down at th' bank. But I failed t' pay up my farm bureau dues and didn't get no notice of th' sale. My wife's memory is gettin' awful poor, seems like. She allus uster remind me o' them things. Reckon I'll have t' give her a little lecter t'morrow. Ef she'd keep her mind on my work a little more, we'd get ahead, maybe. How kin she expect ME t' remember all them little details—what with harvest and hayin' both hittin' us t'gether and one hoss sick, an' no money t' hire help.

"Seems like th' harder a feller works th' more they is t' do and th' less y' can lay by. I reckon th' only way t' make big money is t' use yer brain, an' leave th' heavy muscle-work t' guys thet is built fer it. Now ef I c'd jest figger out some way t' clean up a few dollars in a hurry, I c'd buy thet there ottomattick fishin' reel thet's on sale down at th' hardware store.

"I have it! Jerry Gail was boastin' yestiddy thet his wife c'd do more work in ten hours 'n any woman in this county. Jerry's a bettin' man; he'll bet on anythin' f'm a hoss-race to a dog-fight. I'll jest take 'im up on thet. I'll bet 'im ten dollars, an' we'll let his wife 'n mine put on a contest doin' th' family wash, milkin' an' choppin' wood. We'll get some of th' neighbors t' judge th' winner.

"Th' more I thinks about thet idea, th' more enthusiastic I gets! I KNOW my wife'll win; it's a sure thing, fer she shore is some worker, whatever her other failin's may be! Yessir, th' money's mine before we start. It's a shame fer a feller with such a knack fer finances as me, t' be wastin' his talents doin' farm work! Now, th' only question is—let—me—see—where kin I borry th' ten dollars t' bet?"

Better Range Methods

WHAT agency will most quickly bring about a large and permanent increase in the value of California livestock?—boosting the purebred? swatting the scrub? These movements will help, but the crying need in this State is for more and better forage crops.

Not on the small specialized farms; not in the orchard districts; not even in the big dairying and breeding sections of the State, can the greatest results in livestock raising be shown. This is not to say that it is inadvisable to encourage stock-farming on a small scale. On the contrary, we need more and better livestock upon all classes of our agricultural land. But numbers count in any movement towards increased production, and it is upon the ranges, private and public, that numbers can be made to tell.

The necessary land is available. Yet there is scarcely a stockman in this State engaged in the range business on a large scale, who has not been almost, if not quite, ruined more than once by shortage of feed, following drought conditions.

To develop, therefore, a system of permanent pastures, involving in some cases, the introduction of foreign forage plants, and in others, simply better management of existing grass and browse-lands, is the paramount problem before the big stock-raisers of the State. There was a time when the loss of a few head of cattle from slow starvation was not regarded as of great monetary importance.

Under existing conditions, however, a shortage of feed is a very serious matter, often involving the gravest consequences for the unfortunate livestock-owners. It is but natural that, under such handicaps, our range livestock should have decreased so alarmingly in numbers.

The possibilities in the development of new fodder-plants and the more effecient utilization of native growth have only been touched upon. In other livestock-growing countries, such as Australia, for instance, forage-crop investigations and experiments constitute one of the most important branches of agricultural development. In fact, it is only by giving close attention to pasture-establishment and management that Australian pastoralists have been able to survive the deadly droughts that so frequently beset them.

And California, to be sure, has already recognized the importance of such investigation. In Professor P. B. Kennedy, the University of California has a very able forage-crop specialist and one who has already carried out important projects. The scope of his work has been, of

Jas. C. Kuolin
Editor

necessity, rather narrow, but with limited funds, equipment and time he has uncovered very interesting possibilities.

If the stockmen of this State, however, are to bring about the speedy solution of this, their greatest problem, they must either establish or persuade the University to establish, a special experimental farm; or, better still, a number of farms in different sections, where old and new grasses and "browse" may be tried out on an extensive scale.

With sufficient equipment and funds, those in charge of such a project could also disseminate information on the renovation and re-seeding of pasture-lands; the relative damage or benefit to different classes of range attributable to goats, sheep and cattle; the proper management of pasture-areas under varying climatic and environmental conditions, and the feeding value based on experiments and analyses of different forage-plants.

And in this work, the cattlemen should not overlook the available co-operation of the specialists of the United States Forestry Service, who have long made a special study of the problem and who are in a position to render valuable assistance. The United States Department of Agriculture, also, would no doubt give active support to such a laudable movement, provided more interest were shown by the stockmen, themselves.

Some of our old-time cattle men, who are to be commended for their success and foresight, are nevertheless inclined to take a rather narrow view-point in the matter of range improvement and the study of forage-crop problems. With the active support of these influential men, together with the backing of the younger generation, the members of which are, it must be admitted, a little more inclined to "reach out" towards new ideas, the movement for range improvement would soon assume effective proportions.

It might even result finally in the establishment of a "Range Replenishment Society," subsidiary to the California Cattlemen's Association (and conducted, like the Fruitgrowers' Supply Company, on a co-operative basis) for the purpose of supplying the cattlemen with seeds, special tillage tools, or other equipment useful for increasing the carrying capacity of their grazing lands.

A few "feelers" have already been put out; some far-sighted individuals already recognize the possibilities, from a commercial standpoint, of growing and marketing the seed of special forage-crops. But, as we have stated, this is only the beginning. The movement, in all its aspects, is certain to develop into an extremely important one in its relation to the development of California's vast potential resources.

Orchard and Farm is
"THE SILENT PARTNER"
of the
SUCCESSFUL FARMER

Aggeler & Musser Seed Company

have a demonstration plot in the 1500 block on West Sixteenth street, Los Angeles. The following diagram shows what may now be seen growing there:

PATH — Monstrous Lima Beans

CORN AND MILLET	GRASSES	SORGHUMS
Red Cob Ensilage Corn	Para	Dwarf Broom
Eureka Ensilage Corn	Napier	Tall Broom
Orange Co. Prolific Corn	Napier	Benedict Forage
Orange Co. Prolific Corn	Napier	Wonder Forage
Hickory King Corn	Napier	Wonder Forage
Pima Corn	Napier	Wonder Forage
Pearl Millet	Guinea	Wonder Forage
Italian Millet	Guinea	Jap. Sugar Cane— Sudan
Hog Millet	Cocksfoot— Wild Rye	Jap. Sugar Cane— Kaoliangs
Whip-poor-will— Velvet Bean	Fog— Paspalum Dilatatum	Amber Sorghum
Red Millet	Billion Dollar Grass	Silver Tip Sorghum
Japanese Millet	Rhodes	Ribbon Cane
Biloxi Soy Beans	Natal— Sesame	Honey Sorghum
Golden Millet	Bromus Enermis	Shallu
Brown-top Millet	Merker	Feterita
Chinese Millet	Red Top	White Milo
Indian Millet	Perennial Rye	Egyptian Corn
White Wonder Millet	Italian Rye	Schrock Kaffir Sorghum
Large Headed Millet	Chewings Fescue	Dwarf Milo

PATH — PATH — PATH — PATH

San Jose Canner, Tomato

SEPTEMBER IS THE MONTH TO PLANT

SMILO GRASS

Pennsylvania Broad Leaf Tobacco

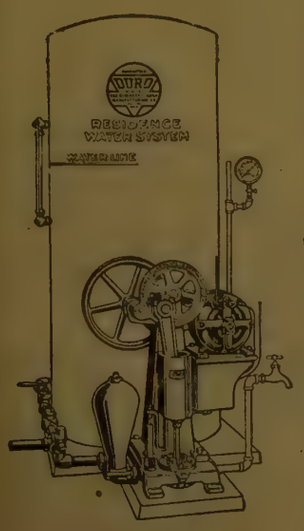
TEFF GRASS

DWARF SUNFLOWER

All persons interested in this demonstration are urgently invited to visit the place at once. It is particularly interesting to all who have silos. The merits of each sorghum and Indian corn is plainly indicated. Millets and grasses, too, may be seen in comparison.

It is a very valuable demonstration.

The Wonder Forage Plant excels all others fully two-fold both in quantity and quality. Call at once and see it. Drive out West Sixteenth street to the fifteen hundred block; or, take a red car marked "Hill & West 16th St." Be sure to take this chart with you; it is your guide.



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TEXAS OIL STOCKS

STOCK MARKET DIGEST NO. 67

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El Paso Duke	Ranger Oil
Great Western	Rex Oil
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With a daily telegraphic quotation and news service direct from the principal markets of the Texas fields, we are in position to render quick service in the purchase of any Texas Oil stock, thus eliminating the inconvenience and uncertainty of trading by mail, while our personal representative on the ground enables us to fill orders at the lowest available prices, frequently at a considerable saving over prices quoted by Texas brokers.

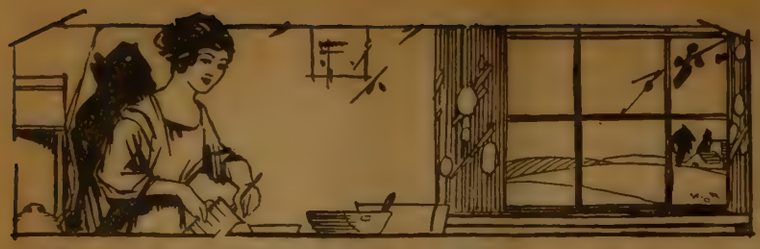
INFORMATION

rendered without charge on any stock. If you contemplate the purchase of any security consult our Statistical Department that you may be able to fully weigh its prospective and present value.

STOCKS BOUGHT AND SOLD ON ANY OF THE COUNTRY'S MARKETS.

Ask for Digest No. 67

WILSON, LACKEY & COMPANY
414 I. W. Hellman Bldg.,
Stock and Bond Brokers.
Los Angeles, Calif. Main 2751.



Helpful Hints for Housewives

Dear Friends:

With economists and students of business conditions freely predicting constantly rising food prices, it certainly looks as though the housewife's problem would be even more serious by winter than it has been during the trying years of the war. Some of us will feel a little better able to pay these prices, but to very few is the prospect pleasing. There may be a few profiteers who will find an element of satisfaction in the situation, and some city residents will probably blame the farmers instead of these unscrupulous dealers, for the high cost of living. The women of the cities seem to forget that farmers' wives also must buy sugar and flour and spices and other staple groceries, and frequently pay even higher prices for them.

All too many country housewives, however, buy almost as much food as those in the city. The farm should be a true food factory, not from the standpoint of economy alone, but because it means better living. What would not most city families give for the fresh fruit and vegetables, milk, eggs and meat, that may grace the farmhouse table without much thought on the part of the housewife as to their cost?

Let us all continue to pay particular attention to the garden and the home orchard; to the canning and preserving of fruits; to making the best use of home made butter and the milk of the family cow or dairy; to getting the most out of the farm poultry. Now, even more carefully than during the war, the farm woman should take advantage of every opportunity to save on the "store bills." Winter is coming. Preserved eggs and canned and dried fruits and vegetables are insurance against the further inroads of that bogie-man, Old Hi Cost. For, as sure as we are alive, he has not even yet seen his best day.—Isabel Sinclair.

The Fireless Cooker

Every summer, with its hot, "sticky," enervating days, brings more women over to the fireless cooker idea. Certain it is that when all farm women know the wonderful advantages of the cookers, thousands more of them will be purchased. Some users, however, expect too much of the device.

Obviously the fireless cooker must be handled with intelligence if best results are to be obtained. It is best suited to those foods which require boiling, steaming, or long, slow cooking in a moist heat. Foods cannot be fried in it, pies cannot be baked successfully in the ordinary fireless cooker, nor can any cooking be done which requires a high, dry heat for browning.

Meats, however, may be partially roasted in the oven and finished in the cooker, or may be started in the cooker and finished in the oven, with much the same results as if they were roasted in the oven entirely. The classes of food best adapted to the cooker are cereals, soups, meats, vegetables, dried fruits, steamed breads, and puddings.

Time of Cooking

When different foods are cooked together in the fireless cooker they must be such as require the same amount of cooking, since the cooker cannot be opened to take out food without allowing the escape of a large amount of heat and making it necessary to reheat the contents. It would not do to put foods which need about one and one-half hours to cook into the cooker with a piece of meat which would stay several hours.

The size of the container used in cooking with the fireless cooker should be governed according to the amount of food to be cooked. Small quantities of food cannot be cooked satisfactorily in a large kettle in the fireless cooker.

Using Large Kettle

If a large kettle must be used, better results will be obtained if some other material which holds heat fairly well is used to fill up the empty space. This may be accomplished in several ways. One is to put the small quantity of food to be cooked into a smaller, tightly closed kettle, fill the large kettle with boiling water and put the small kettle into it, standing it on an inverted bowl or some other suitable support. This boiling water will take up and hold the heat better than air would. Nested kettles offer a satisfactory means of cooking small amounts of several different foods.

The Birthday Wish

By June Frances Dale

Ah, wee curly head nestled close to my breast—
Your dream-day is ended. How swiftly have flown
Those five happy years that I'll always love best,
Though your stout little heart beat apart from my own.

The best that was in me I've given to you,
And my wish for your birthday is this, little lad—
That boyhood and manhood will find you as true
And deserving of love as the one you call "Dad."

Facts About Ice

That the blanketed ice in a refrigerator is a slacker at its post of duty and the person who placed the blanket there an accomplice, may be surprising to the average reader.

A refrigerator is kept cold by the melting of the ice, which takes up the heat within the insulated walls. When the ice is kept from melting, ice is saved, but not food.

At times when it is necessary to wrap the ice to make it last until the new supply comes, any perishable food which is to be used without further cooking should be moved up as close to the ice as possible. Ordinarily, however, it is better to keep food in other compartments in order that the air may circulate freely.

The SERV
in

Probably you are one of the women who are continually finding new and delicious uses for Sperry Drifted Snow Flour. For it is, above all things, *the Service Flour in every home!*

So, why use one flour for bread baking—and another for cake making—when Sperry Drifted Snow Flour serves every purpose? Crisp, delicate pastry; flaky rolls, bread and biscuits; rich, tasty cake and cake-fillings—you can insure success with scores of delightful recipes by using Sperry Drifted Snow Flour.

For Sperry Drifted Snow Flour is the flour of proved purity—of tested uniformity. Scientific tests by expert chemists, manufacturing tests by expert millers, practical tests by expert home bakers—all combine to make Sperry Drifted Snow Flour so uniform in high quality that you can always count on the best results from your baking and cooking.

The Sperry trademark on the Sperry Sack is a guarantee, an assurance of quality, a protection in every home.

SPERRY FLOUR CO.
GENERAL OFFICES, SAN FRANCISCO
U. S. A.

Ten mills and forty-four distributing points on the Pacific Coast

A13

Note—All measurement

SPERRY FLAK
1½ cups Sperry Drifte
spoon salt; ¼ cup short
⅓ (about) cup of cold w
Proceed as for plain
butter which should be
until smooth and elastic.
butter in the center, fold
in the recipe for Sperry
out. Repeat this twice
for use. If butter bre
set aside until coo
handled. This
shells, tarts, et

SPERRY PRODUCTS IN EVERY HOME
SPERRY FLOUR

SPERRY DR
S
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CE FLOUR
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L. Flour is sifted once before measuring. A half pint measuring cup is used.

Y
ur; ⅓ tea-
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cold water
ough, place
as directed
y) and roll
h is ready
the dough,
o be easily
or pastry

SPERRY PLAIN PASTRY

1⅓ cups Sperry Drifted Snow Flour; ½ teaspoon salt; ⅓ cup shortening; ⅓ (about) cup of cold water.

Sift Sperry Drifted Snow Flour and salt together. Chop shortening into the flour, add liquid gradually, using a knife. This dough should be so stiff as not to stick to the sides of mixing bowl. Place dough on moulding board, and roll to ¼ inch in thickness. Then fold ⅓ of this sheet of pastry over to the center, fold the remaining third over the first fold, then fold across. Roll to ¼ inch thickness again. This pastry can be used at once but is improved if allowed to stand several hours. By folding the dough in this manner layers of air are enclosed, which, when pastry is placed in a hot oven, expand, making the pie flaky. Pastry should be put in a hot oven at first, and the heat reduced after it has browned. This pastry can be used for all fruit and berry pies.

FTED FLOUR
OW
Product"

Rhubarb Recipes That Are Different

One usually associates rhubarb only with pies and sauce. This delicious and healthful garden product, however, may be used in other ways. The following recipes have been tested and the results were more than satisfactory.

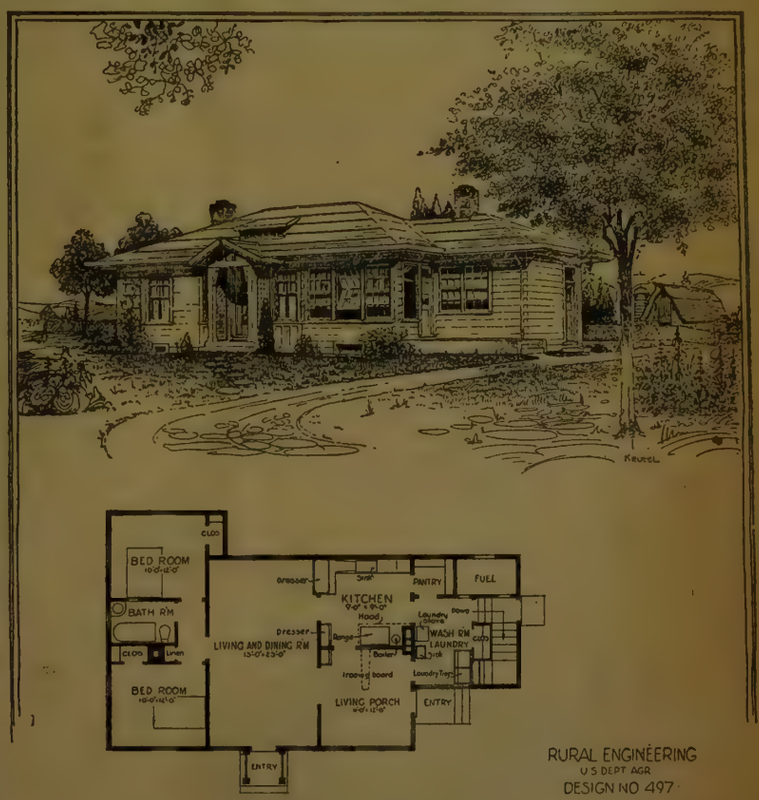
Rhubarb Shortcake

Ingredients—Three eggs, 3 tablespoonfuls lemon juice, 1 cupful granulated sugar, 1 cupful flour, 1 teaspoonful baking powder, ¼ teaspoonful salt.

Beat the yolks of the eggs until they are light; add the lemon juice and gradually beat in the sugar. Beat the whites of the eggs until they are dry, add them to the mixture, and beat it well. Sift together the flour, the baking powder and the salt. Fold the dry ingredients lightly into the egg mixture. Bake the cake in two layers in moderate oven. For the filling take 2 teaspoonfuls gelatin, ¼ cupful cold water, 1 pint red rhubarb cut in small pieces, 1 cupful sugar, juice and grated rind of ½ orange.

Baked Rhubarb

Cut the rhubarb in small pieces. In a baking dish place a layer of rhubarb; sprinkle it generously with sugar and alternate in this way until the dish is filled. Sprinkle sugar over the top, add small pieces of butter and grated lemon rind or cinnamon. Bake the dish slowly until it is well done. Long, slow baking gives rhubarb a rich, red color.



This Cozy Farm Home

Provides an inviting interior with a minimum of waste space. Two bedrooms with a bath between connect with a large, central living and dining room, which, in turn, opens into a kitchen on one side, and a living porch on the other, with space for wash room and laundry, pantry and fuel storage in the rear. This practical house is equipped with a heating system. Working drawings of the plans for this house and many others can be obtained free from the Rural Engineering Division of the U. S. Department of Agriculture, Washington, D. C.

A Different Way

We usually think of baked sweet potatoes as being cooked "with their jackets on." A subscriber tells us, however, that she considers them much more delicious when prepared in the following manner:

Boil, pare and mash the potatoes; add butter and salt to taste, and enough hot milk to make the mass soft and creamy like mashed white potatoes. Put into a buttered baking dish, cover the top lightly with buttered crumbs and bake until brown.

Hot Weather Warning

Germs which grow in food and cause illness grow very rapidly, particularly if the food is a little warm, and are not destroyed unless the food is well cooked before serving. Simply "warming up" is not enough.

Certain kinds of food—creamed chicken, or custard, or warm vegetables, for example—are excellent culture mediums for bacteria which may have been introduced into them by accident. For this reason it is a safe rule to have as short a time as possible intervene between the preparation of food and its consumption.

Lifelong Piano Satisfaction

When you purchase a Piano it might as well be for a lifetime. A good Piano will serve a home faithfully through a generation—with it the children will learn music—grown to youth, they will play and sing the popular hits of the day as well as play the classical gems of the masters—and as old folks they will delight in the music of days gone by. ***Such a piano truly becomes a lifelong friend.*** Therefore, when choosing your piano, choose it as you would your friends—consider dependability, durability, quality, character—so that your choice will give lifelong pleasure and satisfaction.

We offer several makes which have given lifetime satisfaction in thousands of homes all over the United States—they are priced reasonably—our terms will enable anybody to buy a good piano.

We invite you to call at any of our stores—or write us, asking for illustrated catalogues and prices.

We Are Dealers in Steinway and Other Pianos, Pianola and Duo Art Pianos, Aeolian Player Pianos, Player Rolls, etc.

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It can't gum or cake

Only highest-quality petroleum grease, blended with powdered mica by our special process, goes into Mica Axle Grease. Keeps spindles cool and smooth; resists wear and pressure—no hot boxes. Works better, lasts twice as long. Ask your dealer. Buy by the pail.

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MICA AXLE GREASE

THE ELLIOTT SCHOOL FOR GIRLS

RESIDENCE AND DAY SCHOOL
SUPERIOR EDUCATIONAL ADVANTAGES
IDEAL HOME LIFE CHARACTER BUILDING
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1303 So. Gramercy Place Telephone 72826 Los Angeles, Cal.

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, "Examiner" Building, Los Angeles.

2917—A Pretty Gown

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5¼ yards of 44-inch material. Width of skirt at lower edge, about 1⅛ yard. Price 10 cents.

2748—Boy's Suit

Cut in 4 sizes: 3, 4, 5 and 6 years. Size 4 requires 1¾ yards of 27-inch material for the waist, and 1⅛ yards for the trousers. Price 10 cents.

2789—Child's Set of Short Clothes

Cut in 5 sizes: 6 months, 1, 2, 3 and 4 years. Size 2 will require for drawers, 1 yard; for petticoat, 1⅞ yards; for dress, 2¼ yards of 36-inch material. Price 10 cents.

2916—A Stylish Gown

Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 4¼ yards of 54-inch material. Width at lower edge about 1⅝ yards. Price 10 cents.

2929-2923—A Smart Business Costume

Waist 2929 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 2923 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. It will require 6 yards of 40-inch material for the entire costume. Width of skirt at lower edge is about 1⅝ yards. Two separate patterns; 10 cents for each pattern.

2912—Lady's House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5 yards of 44-inch material. Width of skirt at lower edge is about 1⅝ yards. Price 10 cents.

2921—Girl's Dress

Cut in 5 sizes: 4, 6, 8, 10 and 12 years. Size 10 will require 2¾ yards of 44-inch material for the dress and 1⅝ yards for the jumper. Price 10 cents.

2908—Girl's Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. Size 12 requires 4 yards of 44-inch material. Price 10 cents.

2914—Lady's Apron Dress

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42; and extra-large, 44-46 inches bust measure. Size "medium" requires 4¾ yards of 36-inch material. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for our up-to-date fall and winter, 1919-1920 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking, also, "Some Points For the Needle," illustrating 30 of the various simple stiches. This book contains many valuable hints for the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find ..... cents, for which send me the following patterns:

Pattern No..... Size.....

Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

Keeping Down the "Overhead"

(Continued From Page 4.)

a half-dozen adjoining farms in the southwestern corner of the State, near Grant's Pass, his friends heaved pitying sighs and wagged disapproving heads, citing numerous instances where similar investments had proved to be costly failures, several being located near the selfsame River Rogue along whose seductive shores Riverbank Farms are situated. In fact, the Rogue River Valley possesses so many natural advantages that it is only surpassed by Florida and Southern California as a sink-hole for city capital; a place where wealthy Easterners put their dollars into dirt, vainly hoping that some sweet day the income will exceed the outgo and they can live in peace beneath their own vine and plum tree—or palm and pepper, as the case may be. Such hopes are generally built on the sinking sands of impractical, extravagant development or wrecked on the rocks of mismanagement.

Diversification Pays

Leonard and Niles, working together as owner and manager, have scored a success from the start, largely by keeping a watchful eye on the overhead and seeing that it does not pick up the profits and fly away with them. They found Riverbank Farms a diamond in the rough and are making it pay for its polishing.

Hogs, hops, hay, cattle, cream and apples are the six sides to this agricultural jewel which they are grinding each year to greater perfection. Only a small portion of the tract was cultivated by the orginal owners, who followed the lines of least resistance. But a gradual transformation, instead of a violent and costly revolution of methods, is being employed to establish a more profitable system. The animals and crops found on the place were retained until they could profitably be replaced by better ones.

A lot of old apple trees were rejuvenated by an expert orchardist, who obtains from them each year 000 to 8000 boxes f merchantable fruit. Several thousand young apple trees were pulled and consigned the brush heap because they were unprofitable varieties and in a poor location. Extensive plantings of pears are being made on suitable soils in a location which weather records extending over several years have shown to be practically frostless. The trees are of a blight-resistant variety of Chinese origin and when grown to suitable size, will be top-worked to the most profitable commercial sorts.

About 200 acres of timber and brush land is being cleared at one-half the usual cost, the solution of a difficult problem having been found in the tractors above mentioned. Trees a foot through are felled with ease and one sugar pine nearly twice that diameter was uprooted. Instead of felling the timber with an ax or saw and removing the stumps afterwards with dynamite and stump pullers, Mr. Niles uses a cable, which is attached to the tree as high as a man conveniently can reach. This method gives great leverage to the tractors, which easily uproot the forest giants. While one tree is being taken out, a "choker" is fastened to a second tree, a man being assigned to each choker. Another pulls back the long cable, while a fourth man operates the engine. A team of four men is thus enabled to clear an acre a day.

The uprooted trees are converted into cordwood, which finds ready sale and in some instances practically pays the cost of clearing. After the treetops and stumps are burned, the brush is plowed out with a huge breaking-plow, weighing almost a ton and measuring six feet from share point to rear end of moldboard. This immense plow did remarkable execution in clearing a ten-acre field of willows, some of which had attained a height of twenty feet. A furrow two feet wide and fourteen inches deep was opened up with comparative ease, despite the mat of roots which bound the top soil together. Two men followed the plow, piling the brush. After all the trash was burned the ground was disced, cutting the remaining roots and further pulverizing the soil.

With the aid of a scraper and dump operated by compressed air the largest tractor is used to level the cleared land for irrigation, doing the work of six four-horse scrapers. This eliminates the work of six men, since the Fresnos would require that number of drivers, one loader and one dumper, while the tractor outfit needs only one man to operate the engine and another to attend to the scraper. These methods all tend to reduce the altitude of the overhead.

Well-earned Increment

Although Riverbank Farms cost only $75 per acre, the best land in cultivation pays interest on a valuation of $500 per acre, leaving a wide margin of profit for clearing, leveling and irrigating the raw land. The owner puts all his profits back into development work, which is proving a gilt-edged investment.

Two foremen, a dairyman, herdsman, orchardist and bookkeeper have direct charge of the work at Riverbank and receive monthly salaries. The machinist, tractor men, teamsters and other laborers are paid by the hour. Cottages and sleeping quarters are furnished the men, while the wife of one of the foremen supplies board at a fixed price per meal. Some of the employes came with the manager from his former position and have been at Riverbank ever since. The herdsman, Mr. Root, deserves special mention, turning off about as much work as two ordinary men, and having a way with animals which is remarkably successful. Root is a single man who boards himself and invests his savings in Liberty Bonds.

ONE RIVERBANK ECONOMY
The Guernsey bull, for which, as a calf, Niles & Leonard paid $1000. transporting him 2000 miles to the Oregon ranch...They consider him cheap at the price, because his breeding is right.

Extensive fertilizer and other experiments are conducted each year in order to apply to Riverbank the knowledge gained by reading the best bulletins and farm papers, attending meetings of stockmen and farmers and visiting other successful agricultural enterprises. Last, but by no means least, Niles has the constant assistance of his wife, a capable and cultured lady, whose native ability and good judgment constitute valuable managerial assets.

Have You Noticed

How many real people—men and women engaged in the same work as yourself—talk to you through the columns of Orchard and Farm? This magazine is a clearing-house for practical, useful ideas. Send us yours!

MOLINE RICE BINDER

Conditions under which rice is cut demand a binder that has strength throughout, one whose working qualities are positive and dependable, one that insures a maximum of traction at all times and one that provides protection against the inroads of dampness and mud. Rice growers can make no bigger mistake than to go into the field at cutting time with an inferior machine that causes costly delays at harvest. The Moline Rice Binder will measure up to the most exacting requirements. It is quality built throughout and overcomes the hindrance of actual field conditions.

For this convenience the driver will find that every adjustment necessary for the best work can be accomplished with the least time and exertion on his part.

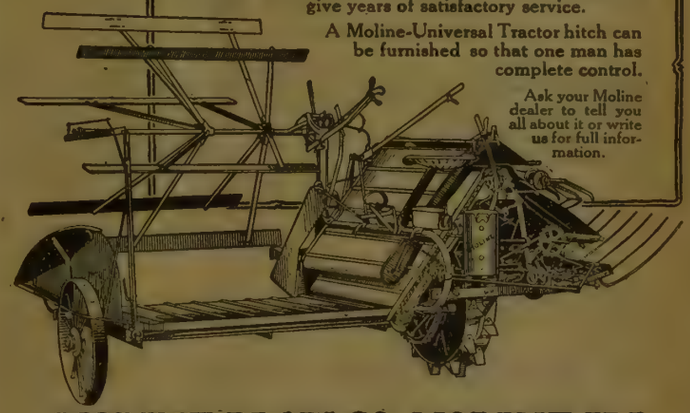
The utility of the Moline Rice Binder is a big feature. Its outstanding mechanical superiority will be found in shafts and bearings, gear driven reel, open end elevator, clearance roller, elevator aprons, top drive, apron tighteners, aprons, anti-winding washers, butt adjuster, and tried and true binding attachments. Simplicity and positive action is the feature of each working part.

The Moline Rice Binder will grip the ground under the wettest conditions and because of its ample protection to affected parts it will withstand the rotting and corroding action of water and mud to give years of satisfactory service.

A Moline-Universal Tractor hitch can be furnished so that one man has complete control.

Ask your Moline dealer to tell you all about it or write us for full information.

The Moline Line of Implements
Plows (steel and chilled)
Harrows
Planters
Cultivators
Grain Drills
Lime Sowers
Mowers
Hay Rakes
Hay Loaders
Hay Stackers
Grain Binders
Corn Binders
Pitless Scales
Spreaders
Wagons
Moline-Universal Tractors
Stephens Salient Six Automobiles



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MANUFACTURERS OF QUALITY FARM IMPLEMENTS SINCE 1865

MONROE PERFECT SILO

Ends your silo troubles. Stays round. Stays tight—wet or dry. Easy to build. Absolutely smooth inside. No hoops or bolts to need adjusting or rust away. No upkeep cost. Easy to take apart and remove. Quickly and cheaply enlarged or reduced.

Write for Booklet A

The Lewis Co.
Dept. "C"
1st Nat. Bank Bldg., San Jose, Cal.
Live Dealers Wanted.

PLANT THE RIGHT SEED AT THE RIGHT TIME

Plant the right variety for your purpose, whether you are growing for home or market, or whether you are growing for cattle, horses, hogs, goats, rabbits or poultry.
See the 1919 Catalog of the

Aggeler & Musser Seed Co.
620 SOUTH SPRING STREET, LOS ANGELES.

UNION PIPE COMPANY

PIPE New and second-hand water pipe, all sizes from ½-in. to 12-in. Well casing, fittings, valves. Phone, write or call for our prices. All pipe put in first-class condition. PIPE

UNION PIPE CO., 7th and San Pedro Sts., Los Angeles, Cal. Phone Bdy. 3754

PORK PRODUCTION

By actual test pure Hawaiian Cane

MOLASSES

will increase pork production approximately five-tenths pounds daily over a barley and tankage feed, yet it sells for less than half the price. Do you know of any other feed that will do this at any price?

Why not get all the profits out of your hogs?

Write us for full particulars.

W. H. Young Company
58 Sutter St., San Francisco

Tractor and Truck (12-24)

For the Price of One

THE WHEAT TRACTOR.
Equipped With Road Wheels.
Write for descriptive printed matter.

The WHEAT TRACTOR handles three 14-inch plow bottoms under all normal conditions. It will furnish power for any hay baler or silo filler, also plenty of power for a medium sized grain separator, with weigher, wind stacker and self feeder. As it is equipped with a governor like a stationary engine, the WHEAT TRACTOR will furnish steady power for pumping water, running an ensilage cutter or doing any similar farm work.

With the WHEAT TRACTOR'S interchangeable road wheel attachment it can be converted in less than an hour into a road truck with rubber tired wheels and will do anything that a 3500-pound truck will do with trailers. Some good territory still open for dealers.

THE HESSION SALES CORPORATION

California Distributors. 235 South Los Angeles St., Los Angeles.

GOLDEN GATE WEED CUTTER

Kills the Weeds and Cultivates the Soil.

Greatest weed killer on the market. Cuts them off clean, under the surface, close down to the roots. Besides, it breaks up the ground so thoroughly that one user says he saved $200 in a single season, because after cutting the weeds he did not have to plow. Cuts seven feet or less. Weighs but 230 pounds. Cut adjustable to any depth. Constructed of steel throughout. No other implement like it.

WRITE FOR CIRCULAR which illustrates and describes the Sigurd Weed Cutter and contains letters from many users.

C. G. SIGURD, Manufacturer
Capital Ave. and McKee Road, San Jose, Cal.

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	$50 Bond	$100 Bond
First 3½s	$52.50	$105.00
Second 4s	$49.02	$ 98.04
Third 4¼s	$48.83	$ 97.66
Fourth 4¼s	$47.46	$ 94.92
Fifth 4¾s	$49.10	$ 98.20

The government urges holders of Liberty Bonds to retain them. If necessity demands the sale of these government bonds, the holder can secure from R. V. Jones full prices, based on quotations of July 14, as listed above.

If coupons have been cashed, the amount received must be deducted from prices quoted. Pay no commissions, as allowance has been made for brokerage in the prices listed above.

Victory note receipts, part-paid bonds and War Savings Stamps cashed.

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POTTENGER & POTTENGER
Suite 628-29-30 Exchange Building, 3rd and Hill Streets

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LESTER EUGENE VAN HISE in Charge of Drafting and Designing.

Hours: 9 to 5 and by Appointment **Phone 11679** Los Angeles, California.

Tyndale's Eucalyptus No. 1 Stops The Cough

A syrup preparation our mothers and grandmothers used to make from those well known roots and herb, Horehound, Licorice and Elecampane, that everybody praised and many of them raised right on the old farm home: to this we add the valuable medicinal property of the "Eucalyptus." It contains no opiate, is pleasant to take and immediately relieves pain and Cough of Bronchitis, Influenza or Croup. A four ounce package, delivery insured, to any address in the U. S. on receipt of a Post Office order for Sixty Cents.

THE TYNDALE EUCALYPTUS CO., ROUTE C, FRESNO, CALIFORNIA ESTABLISHED IN 1883

SYSTEM

"in shop office and field"

New Bulletins

"The Dean" says: "Education consists principally of common-sense plus the ability to find knowledge as it is needed. A good memory and a stock of dry facts and figures are not so useful to the business farmer as a supply of reliable text-books and bulletins, indexed for ready reference. Make the most of the Government and State publications."

AMONG the late publications of the United States Department of Agriculture are a number which are of interest to California formers. Address the Division of Publications, U. S. D. A., Washington, D. C. These booklets will be sent free to anyone who applies. Order by number.

	Farmer's Bulletin
White Ants (Methods of Preventing Damage)	1037
Saving Labor in Sugar Beet Fields	1042
Striped Cucumber Beetle and Its Control	1038
Rhodes Grass	1048
Laying Out Fields for Tractor Plowing	1045
Control of Cherry Leaf-spot	1053
California Sugar-beet Growing	760
Currants and Gooseberries	1024
Destroy the Barberry (A plea to farmers)	1058

The University of California, Berkeley, has recently issued a bulletin by Professor Tufts on "Polination of the Bartlett Pear." Ask for Bulletin No. 307. Another publication of the California College of Agriculture is a circular by Woodbridge Metcalf, dealing with California hay and grain fires.

The University of Arizona Agricultural Experiment Station, Tucson, has published a very instructive bulletin dealing with machine-made cement pipe for irrigation and other purposes.

Simple Chimney Cleaner

The best way to prevent soot-clogged flues and chimneys is to burn your old worn-out dry-cell batteries. This is an easy and very efficient method. Merely get a good hot fire going, knock the pitch out of the top of the batteries (as it may make a clinker), then throw the old batteries on the fire, open the lower draft and the damper in the chimney. This causes the batteries to burn quickly and the zinc and other ingredients used in the cells, having a chemical affinity for carbon dioxide (soot), quickly convert it into gas.

If this is done when the batteries are changed on the gas engine, tractor, motor car or telephone, the chimney and pipes of the stove or furnace will be kept practically sootless at no expense. These wornout batteries are good for no other purpose.

Substitute for Air

The use of tire-fillers to take the place of air in Ford pleasure car and truck tires has reached a point where nearly 100,000 cars are so equipped. One large factory in Chicago has recently doubled its space in order to keep up with the growing demand for its product. The fact that some of the largest users of tire-fillers are industrial concerns which have made exhaustive tests would indicate that the idea had long since passed the experimental stage. It is claimed for the "filler" that it rides as easily as air, and prevents punctures, blowouts, excessive wear and damage from under or over-inflation, and the numerous ills that follow in the wake of every pneumatic tire.

Low-grade Fuels

IF THE power user can secure kerosene or distillate at 10 or 12 cents per gallon, as against, say 20 or 24 cents for gasoline, it is evident that he can save one-half on operating cost, provided the kerosene will furnish as many power units per gallon as gasoline.

It has been demonstrated that kerosene will furnish more power under certain conditions. The engine must be constructed to use kerosene, the compression must be altered slightly to suit the heavier fuel, and provision made to preheat it. Some manufacturers accomplish this by continuous firing, but it is just as practical to obtain the necessary heat from the waste exhaust.

Water is another essential in using kerosene. It is injected into the mixture, according to the load of the engine. In practice, the use of kerosene or distillate is little different from that of gasoline. The engine is actually started on gasoline, because it vaporizes quickly, cold or hot, and ignites more readily when the engine is cold. In fact it would take an expert to start on a purely kerosene fuel, and even some of these would fail.

To save time, therefore, the engine is "warmed up" on gasoline. Then the low grade fuel is let into the fuel line and with such slight adjustments of feed valve and water valve as may be desirable, the engine is good for an all-day run.

The power user who has plenty of work for an engine can certainly save money by using cheap fuel. Probably every engine owner could operate at less cost, but where the run is short, say half an hour at a time, with a 2-horse power engine, gasoline would be easier to use, and but little more expensive. Or if the engine is used on work that requires starting and stopping many times a day, gasoline would likely prove the better fuel. But for the all-day grind on hard, heavy work, kerosene and distillate are the "winners."—Ed. M. Witte, Witte Engine Works.

An Auto Accident

To Orchard and Farm:

I want to take this means of warning other farmers of a condition which caused a very serious accident with my car. I have since learned that fully 50 per cent of auto accidents result from similar neglect; it seems strange, therefore, that we, as well as many others, did not realize the seriousness of the situation.

We had always taken good care of our car, oiling and greasing whenever necessary and keeping the motor tuned up. But for some reason we had the idea that the wheels would take care of themselves. Then one day we had a smash-up. The right front wheel simply crumpled up while we were making a sharp turn onto a bridge, and it was only by a miracle that none of us was killed. As it was the car was terribly damaged and we all received severe bruises and cuts. Then we remembered that the spokes had been "groaning" and squeaking and that we had noticed for several days a looseness in the felloes.

You can be sure that hereafter we will not only keep our wheels lined up and inspect the lugs and bolts, but also see that every spoke is tight and true. We are convinced that it will pay to be careful.—Jacob Waltham, Riverside, Cal.

Sunflowers

Facetious Farm Hand

"I guess the boss must have been kidding me," said the "green hand" from the city to one of his fellow-workers. "He told me, when I finished cultivating, to leave the machine here and bring the horses on foot over to the hay-shed. On foot—ha-ha! Wonder if he thought I would try to put 'em in a wagon and haul 'em over!

"Yesterday he told me that when I changed the wagon-box I would probably want a longer reach. He has a funny idea of humor. The only time I really need a longer reach out here is at the dinner table.

"He pulls a lot of jokes that are too deep for me. Wednesday he came out of the barn, where he had been looking at that sick sheep we brought in from the pasture, and I heard him say that he thought he noticed some improvement in the weather! And, gosh, it's getting hotter every day!"

A Suitable Vocation

"I cawn't decide," said Reggy, just arrived in the West, after participation in the late European argument, and about to take up agriculture as his life work. "I cawn't decide just what branch of farming to follow, you know. I would like dairying if 'twere not for the bally milkin, and the raising of swine would appeal to me except that it involves the mussy chore of feeding the beasts. Poultry-raising is interesting but it is such a bore to gather the eggs, and the cockerels, you know, will not let a chap sleep after six in the morning. As for grain farming, one has to work either with smelly horses or greasy tractors. And fruit-raising calls for a great deal of hard work right in the hottest part of the year. Really, it's a problem to know what to do, old chap."

"I have it," broke in Bill Brawn of Brawley. "I know just the line for you. You kin grow self-raisin' pancake flowers fer th' exclusive florist trade."

Astonishing Ads

WANTED—A self-starting farm hand, accustomed to high-gear work and never over-tired. Apply on own power to Twinsix Ranch.

FOR SALE (or will trade for high-powered touring car in good condition)—One-horse surrey and brass-trimmed harness. Reason for selling, death of horse. Abner Hornbeak, care Hornbeak's Emporium.

BUSINESS CHANCES—Partner wanted for nut ranch. I furnish the brains; you furnish the money.

WANTED—On account of the death of my wife and to relieve my loneliness, will trade kitchen utensils for a good talking machine.

Of all sweet words
Of pen or tongue
The sweetest are these:
"The dinner bell's rung!"

Our Answer Department

Replying to "Puzzled," the one infallible test for distinguishing mushrooms from toadstools is to cook up a small quantity of the doubtful delicacy and feed same liberally to the neighbor's dog. Or if the dog is not hungry, the chickens will serve the purpose equally well. This test is attended with little risk if you choose a day when neighbor and his family are away. No charge.

Typographical Error

In Donald Graham's article on hog-raising, published in the July issue, it was advocated that the hogs be fed "ground barley or ground milo to the amount of 40 per cent of their live weight." This was a typographical error. The sentence should have read "4 per cent of their live weight."

Turns in little more than its own length

The Cletrac is being more extensively used for orchard work than any other tractor because of its small size, short turning radius, sturdy construction and economical operation.

And because of its distinctive tank-type construction it is particularly well adapted for work on hills and over loose, soft soil.

It operates on a surprisingly small amount of kerosene, distillate or gasoline, yet gives you all the power you need. It steers by the power of its own engine. It will turn completely around, with an implement, *in little more than its own length.*

Its unusually small size, 50 inches wide, 52 inches high and 96 inches long, enables it to drive easily under low hanging branches and between trees making it ideal for practically any kind of orchard work.

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Twin City Tractor

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The highest grade tractor will unfailingly prove the least expensive and pay the biggest dividends.

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BEAR this point in mind the next time you buy a wagon—**Columbus and Weber wagons are guaranteed to stand up under capacity loads.** You don't have to be a wagon expert to buy a **Columbus** or **Weber** wagon safely. All you really need to know is the weight of your heaviest loads. Buy a wagon marked to carry that load and we guarantee safety and satisfaction.

Ask any dealer who carries **Columbus** or **Weber** wagons to show you just what we mean by this statement, or write to us for full information. Our wagons have many good features—the International fifth wheel, the sandboard wear plate, link end rods, folding end gate, superior material—more features than you will find on any other wagon. All these help to give the good service, long life and economy that you get with **Columbus** or **Weber** wagons. The same high standards of quality and satisfaction apply to all the machines in the list below.

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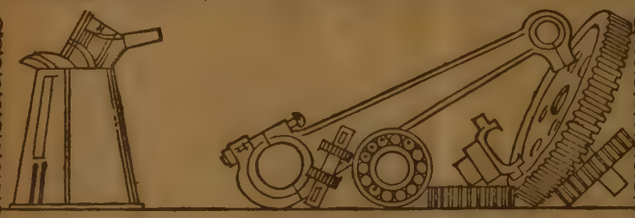

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Freedom from unnecessary repairs and longer life for your car result from correct lubrication with Zerolene. Scientifically refined from selected California crude oil. Gives maximum lubrication with least carbon deposit. Get a Correct Lubrication Chart for your car.

STANDARD OIL COMPANY
(California)

Weeds and Weed Control

(Continued From Page 5.)

of more than 2000 acres of rice land in the Sacramento Valley, and is now present in alarming quantities on a considerable acreage, which will soon be rendered unprofitable for rice growing unless active steps are taken for its complete eradication or control."

The seed germinates at the same time as the rice and the plants grow to maturity in about 65 days. If this first crop is allowed to go to seed, a second crop will develop before the rice is ready to harvest.

In order to prevent the further spread of this grass, the grower must sow clean seed. It would be well if the prospective rice-planter were to be compelled by law to follow this rule. He should have seed tested by the county horticultural commissioner or the farm advisor, and if it is not clean seed, should not buy it.

When water-grass is present in a field prevent it from going to seed if possible. Individual plants have been known to produce as many as 40,000 seeds. Plow, harrow and irrigate infested land in the fall. This will tend to germinate weed-seeds and will leave the land clean for spring sowing. In cases of severe infestation, crop rotation will be necessary, including, if possible, the use of some "hoe crop." Summer fallowing is also practiced with good results. One good farmer stated that his best results were secured by cropping to rice two years, summer fallowing one year, following with a crop of wheat or barley—then planting back to rice. The method of procedure, however, must depend upon the requirements in each individual case and the conditions to be met. If the ground is too alkaline for wheat, summer fallow may be the only recourse.

Ditch banks in the field, as well as levees, should be kept clean. For cleaning the banks, a strong solution of sodium arsenite can be used, 4 pounds to 100 gallons of water. It is better to purchase this material already made up, if possible, as it is very poisonous and home-mixing is somewhat injurious to he eyes and skin of the individual who does the work.

Screens can be placed in the head-gates and lateral gates of irrigating canals, using a very fine mesh for the inner gates. They should be cleaned very frequently, however, so as not to obstruct the flow of the water. Where there is a severe infestation of water-grass, screens will choke too rapidly to be of any practical value.

The directions given here will aid in keeping down this pest. They are not expected to be a panacea. No one has yet discovered an economical method of controlling water-grass. The high price of rice during the past few years has been the salvation of many farmers. As soon as rice goes down these men must either go out of business or solve the rice weed problem.

Johnson Grass

Where Johnson grass (sorghum halapence) is not found, every known means of keeping it out should be employed. A great deal of trouble has been caused recently in California by the sowing of oat-seed containing Johnson grass. Especially in irrigated sections, this plant becomes quite a pest when firmly established. Certain parts of Central California are today so badly overrun with the grass that otherwise valuable agricultural lands have been turned over to pasture. Farmers have spent thousands of dollars in attempted control and still it remains one of our most serious weed pests. The methods that have been recommended for its control are shallow plowing, raking and burning. The pieces of rootstocks and stems which are brought up by the plow should be very carefully removed from the soil, for each section will sprout roots and form a new plant. Ditch banks and roadsides should be kept clean, and above all, no plants should be allowed to go to seed.

The relation of irrigation canals to weed-seed distribution is important. There is no doubt at all that millions

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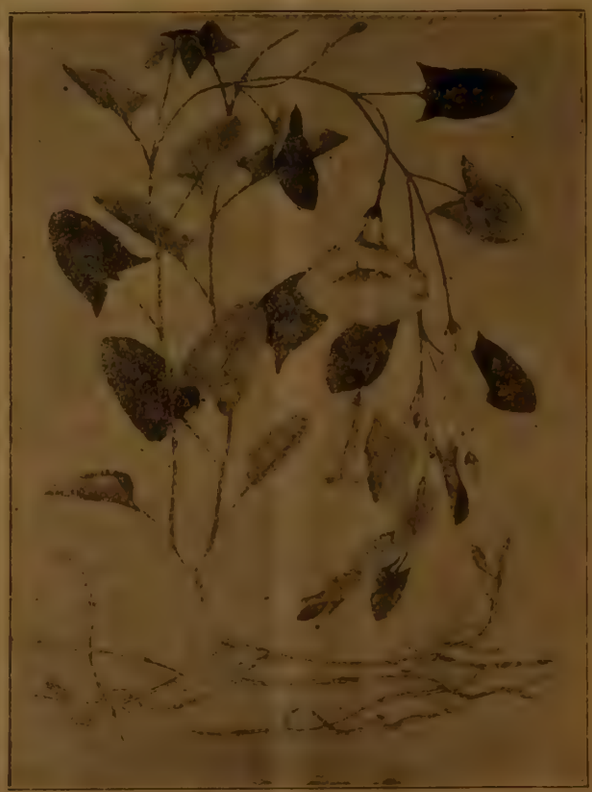

Here is an old enemy, well known to most of our readers—the wild morning glory, *convolvulus arvensis.* The long underground rootstocks are an agent in spreading into new territory.

of Johnson grass seeds are distributed annually in irrigation water. The use of screens in the headgates and laterals no doubt under certain conditions will prove of very great assistance in keeping the seeds of Johnson grass and many other weeds off the land.

In considering the eradication of Johnson grass from a field, it should be understood that one plowing is not sufficient. If the infestation is very heavy, it might be possible to plant the field in the fall to grain, cutting this in the spring for hay and then to plow or disc the field four to six inches deep for summer fallow, cultivating out the weeds from time to time as they appear. In the fall the field can again be planted to an early crop. Care should be taken to rake out all rootstocks and broken stems. In Stanislaus County, small patches of Johnson grass have been destroyed by applying stove-distillate to the crowns with a small hand-spray. This method is especially valuable in vineyards and around trees where cultivation is difficult. The distillate will not kill the trees, if reasonable care is exercised.

Wild Morning Glory

The methods of eradicating morning glory (Convolvulus arvensis) are much the same as those recommended for Johnson grass. Small patches can be controlled by smothering. In the coast regions arsenite of soda has been found satisfactory. The University of California has published a bulletin on the control of wild morning glory by the use of chemical sprays. This bulletin can be secured free of charge upon application to the Director of Agricultural Experiment Station, Berkeley, California. Up to the present time, however, the most practical method of removing morning glory is by practicing constant cultivation. This method is somewhat expensive, however, since it is necessary to not crop the soil for at least one season. It has been suggested that grain might be planted in the fall and the crop harvested early in the spring for hay, the soil then to be plowed or disked and cultivated continuously every five or six days throughout the summer. The object is to prevent the development of green leaves. In this way the reserve food supply stored in the underground roots is gradually exhausted because the supply is ordinarily replenished from the green leaves. The following year will find a much less serious infestation. The weed will probably come up in patches which can be smothered or given special cultivation or applications of arsenite of soda, carbon bisulphide or other weed-killers.

Where morning glory occurs in a vineyard it is difficult to offer practical suggestions for its control. In such places the farmer must apply the remedy that will best suit his own conditions. In Hawaii, the pineapple growers use arsenite of soda in large quantities. They have a specially constructed sprayer for such work and have had very good success. The arsenic does not collect in the soil in large enough quantities to do harm and the noxious weeds, which grow very luxuriantly in that country, are held in check.

Dodder

Alfalfa dodder (Cuscuta arvensis) and small seeded dodder (Cuscuta epithymum), are frequently found in the alfalfa-growing sections of the State. In Southern California, on the native shrubs, Cuscata subinclusa occurs to a considerable extent. It often covers large areas with its reddish-brown tangles, completely submerging the underbrush. The seed of dodder is frequently carried as an impurity in alfalfa and clover seed. It

(Continued on Page 29.)

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Thousands of Moline Power Farmers in all parts of the country are making more money with less hard work. They are getting more profit and enjoyment from farming, and you can do the same by using the Moline System of Power Farming.

With the Moline-Universal Tractor and Moline Tractor Implements, you can do all farm work, including cultivating, faster, better and cheaper than you ever did before. You can eliminate practically all your horses for field work. And one man operates both tractor and implement from the seat of the implement.

Read what the Moline-Universal Tractor has done for the following Moline Power Farmers:

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"It has made it possible for one man to do the work of two and sometimes three men. I can plow twice as much as I can with five horses and gang-plow." Frank S. Wales, Polo, Ill.

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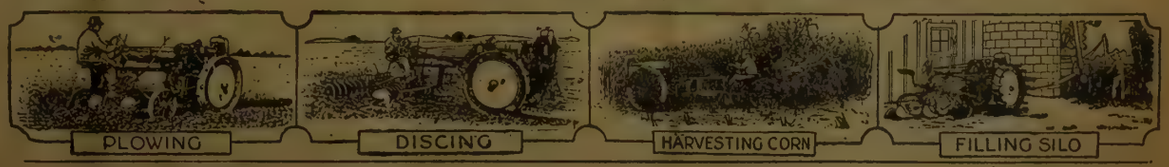

If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

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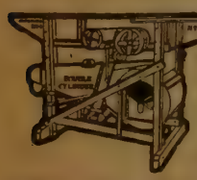
20 large Wardrobes, double doors, mirrors and hardware complete, $7.50 and $10.00.

Three carloads Mill Goods, new and perfect, SPECIAL PRICES. Also Nails, Boilers, Pipe, Cabinets, Showers, Lath, Shingles, Shakes, Galv., Corr. Iron.

We will sell you a car lot at better than wholesale prices. Largest Stock, Lowest Price; Satisfaction Guaranteed. Get yours now before prices go higher.

The Wreckers
SYMON BROS.
BLOCK 11TH AND MARKET, S. F.
21st and San Pablo, Oakland.



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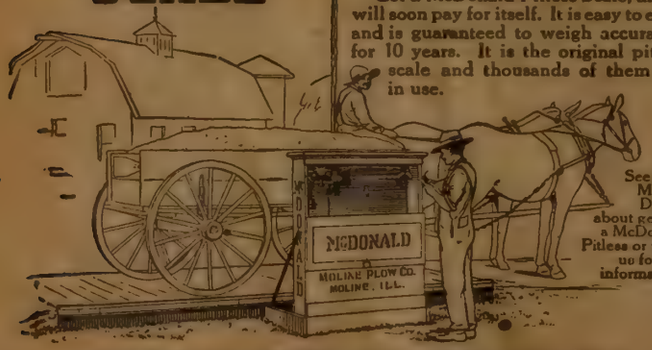

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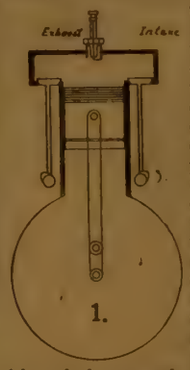
Doctoring the Sick Tractor

What to Do and How to Do It

By W. W. Rainey

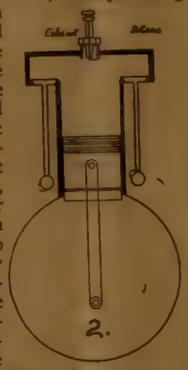
ONE of the first essentials in the care and operation of a tractor motor is a knowledge of the fundamental principles of gas-engine design. While the following explanation is not exactly appliable to all motors, it may generally be applied to any internal combustion engine. Let us ascertain what takes place during two revolutions of the crankshaft and we shall find out, as the old darkey said, "why a motor motes." I would suggest that the reader fix these simple explanations carefully in his mind, as such knowledge will be of great assistance in applying the practical suggestions to be outlined in succeeding articles.



Cycle of Operation

The tractor motor works on the four-stroke principle, meaning that the piston makes four complete strokes to complete a cycle of operation, the crankshaft making two complete revolutions for each power stroke of the piston.

First, the piston travels out of the cylinder, drawing in a mixture of fuel and air through the intake valve, which is one stroke; then, it travels back into the cylinder, compressing this charge, which is the second stroke. As the crank passes the inner center, the charge is ignited with the electric spark and the piston is forced out of the cylinder, which is the power stroke. The piston being connected to the crankshaft by means of the connecting rod, the power of the explosion is communicated to the crankshaft, which causes it to rotate. Near the end of the power stroke, the exhaust valve is opened, allowing the burnt gases to pass out of the exhaust as the piston passes back into the cylinder on the exhaust stroke, thus completing the series of operations called a cycle.



Intake Stroke

Diagram No. 1 represents the beginning of the intake stroke. You will note the position of the cams; the exhaust valve has just closed and the intake is just ready to open. In reality, the exhaust closes five degrees after the crank has passed dead center and the intake opens five degrees later, the intake valve passage, of course, being connected with the carburetor and the exhaust valve with the exhaust pipe. The cam shafts rotate at one-half the speed of the crankshaft, and will open the intake valve just as the crank passes over the center and starts the piston on its downward stroke.

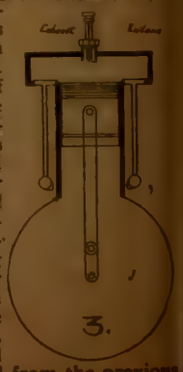
Diagram No. 2 shows the position of the piston at the end of the intake stroke and beginning of the compression stroke. Diagram No. 3 illustrates the next stroke in the cycle, the compression stroke. As the crank continues to revolve, the piston is forced back into the cylinder, compressing the charge of air and gasoline-gas. The air cannot escape, owing to the fact that the cam has traveled clear under the valve and allows the intake valve to close again.

The combustion chamber being air-tight, the air is compressed to a pressure of from 60 to 80 pounds per square inch. During the process of compression, the temperature rises very rapidly, due to the fact that you are confining into a small space a certain number of heat units which the air contains before it is taken into the motor, and as you bring these heat units into the smaller space, the temperature naturally rises. This change is what determines the compression pressure; if the pressure is run too high the temperature will rise to a point that will cause the mixture to ignite or burn. This is called pre-ignition.

Exhaust Stroke

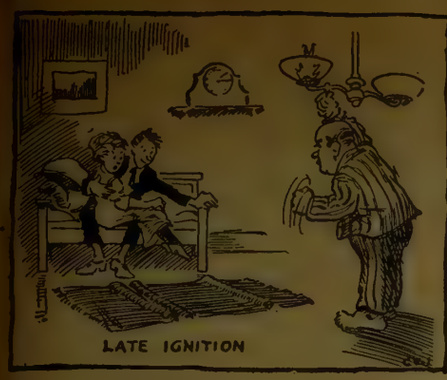
Illustration No. 4 shows the position of the piston at the end of the power stroke or when the exhaust is open. It will be noted that the exhaust valve is opened before the crank has reached the dead center. The reason for this is the fact that the pressure has diminished to such a point that there would be little advantage in holding it longer, as the piston has practically completed its stroke even though the crank has not.

The opening of the exhaust valve at this point allows the hot gases to escape, which makes the motor run cooler and prevents any possibility of a pressure still existing in the cylinder when the piston starts back on the exhaust stroke. The energy stored up in the fly wheel from the previous



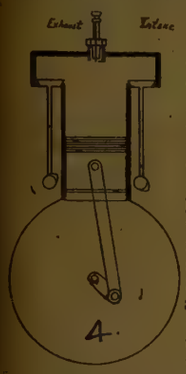
Diagnosis

The first step in the treatment of your ailing tractor is correct diagnosis of the illness affecting it. The physician, before he can prescribe for his patient, must correctly interpret the symptoms and determine the nature of the ailment. In order to do this he must possess a thorough knowledge of the parts of the human body and their functions. So it is with the tractor-owner. Without a knowledge of the parts and principles that make his machine a "living" thing—a thing of power—he cannot tell dangerous "symptoms" from unimportant ones nor prescribe the proper treatment. Many a chronic case of loose bearings or carbon deposit has developed into an acute attack calling for a "major operation," when a better knowledge of the tractor's vital organs and a little emergency treatment might have saved the day.



stroke will carry the crank around its next revolution, forcing the piston through its exhaust stroke, its intake stroke and compression stroke and bringing it back to a point where the power stroke can be delivered again. Then, another quantity of energy is stored up in the fly wheel, and so on, indefinitely.

The exhaust valve opens on most motors when the crank has yet from 30 to 50 degrees to travel before reaching the outer center. The intake valve closes from 15 to 30 degrees after the crank has passed the outer center. The reason for closing the intake valve so late is this: First, the piston has traveled so fast that the air has not been able to follow it and to maintain atmospheric pressure. Second, due to the angularity of the connecting rod, the piston is practically standing still the first fifteen degrees that the crankshaft travels, and is traveling so slightly the last ten degrees that there has been a very small displacement, which will not reduce the quantity of air taken into the cylinder as much as would an earlier closing of the intake valve.



Interest in Contest

Several articles already received indicate that competition will be close for the cash prizes offered for the best articles from our subscribers on the subject: "Why My Tractor Is a Good Investment."

On page 34, in the advertising columns, will be found further details of this contest, as announced in the July issue.

We believe that the one subject in which every farmer is interested, no matter what his "line," is that of power farming. And surely our readers are more interested in an exchange of ideas and experiences than in tractor articles of other kinds that we might publish. In conjunction with Mr. Rainey's instructive articles on the care of the tractor, we wish to give practical information showing how the use of power has cut costs or increased profits on different types and sizes of ranches.

We ask our readers, therefore, to co-operate with us, and offer very attractive cash prizes, considering the small amount of effort involved in sending in a short article.

Be sure to read the advertisement on page 34.

On page 22 will be found details concerning our other contest, now on, for general "Helpful Hints" of any kind. We recently distributed $105 in cash prizes to fortunate winners in a similar contest. Don't let another day pass without sending in something for one or both of these contests. It may mean some "easy money."

L. A. Tractor Demonstration

With the announcement of a definite date for their 1919 tractor demonstration, the Traction Engine and Implement Dealers' Association of Southern California is now carrying forward plans for the most extensive and complete exhibition of farm tractors, engines, implements and accessories ever shown in the West.

The show will be held September 16 to 21, on a section of the famous La Brea Rancho, Melrose and Crescent avenues, Los Angeles (directly opposite the De Mille Aviation Field). A very desirable tract of some 300 acres was secured through the courtesy of George Allen Hancock, and will be devoted to a "modified field demonstration."

The present plans of the Los Angeles Association call for a combination "still" show and a field demonstration, the latter to be conducted by individual exhibitors. The so-called "public" demonstration of former years has been abandoned, and a plan similar to that advocated by Orchard and Farm, following the recent Sacramento demonstration, has been adopted. It is believed that the public attending the show will be accorded more comfort by the adoption of the new plan, and that consequently better attendance, greater enthusiasm and more sales will result.

Again Orchard and Farm urges that every person interested in any branch of agriculture and any one else who believes in keeping posted on the "live" issues of the day, plan to attend this show. This publication has always maintained that the demonstration is one of the greatest factors in upbuilding both the tractor industry and the business of agriculture. It offers the farmer the surest and best means of choosing a machine capable of fulfilling his requirements. It gives the public, generally, an opportunity to keep posted upon the development of America's most wonderful new industry—an industry which, in less than 10 years, has revolutionized the age-old and basic occupation of food-production. You cannot afford to miss a big tractor demonstration of this nature. Let us all be there!

Won by Tanks

That many members of the A. E. F., especially former farm lads, have returned to America with a great respect for the tractor is indicated by many interviews and letters compiled by tractor dealers. One Southern California dealer in "tank type" machines received a letter from a ranch owner not yet discharged from the service, who said that although he had formerly depended entirely upon horses to do his ranch work, his observation of the work of the tractors in France and Belgium had convinced him that they were a necessity in modern farming. He stated, further, that he planned to purchase a tractor immediately upon his return. He had been won over by seeing the Herculean tasks performed by army tractors, such as hauling guns and supplies and doing road work. Thus we see another example of important lessons learned by service men—lessons which they can now put to work.

"Send Up the Holts"

In the retreat from the Somme in 1918, the "Caterpillar" Tractors saved the British heavy artillery.

For 24 hours at a stretch the "Caterpillar" Tractors pulled 18-ton guns along almost impossible roads, with motors cool and efficient, with track-parts, gears and shafts unhurt by the terrific strain. Holt design, materials and workmanship proved sound.

This performance and hundreds like it, prove conclusively that no work on farm, road or forest is too severe for the "Caterpillar" Tractor to handle with ease, economy of operation and absolute dependability. Buy your "Caterpillar" Tractor now. Send for Catalog 404.

We Have Shipped Cuttings of Napier Fodder

(Or Elephant Grass) not only to nearly all parts of the United States, but to Canada as well.

We are growing it on our own ranch to feed our stock and are convinced that it is the most wonderful forage plant for the Great Southwest yet discovered. We are now booking orders for summer and fall delivery.

Buy from a practical rancher who grows his plants under such conditions as will produce hardy, drouth-resistant, high-productive stock that will do well on YOUR land.

Prices: $1 a doz.; $5 a hundred.
DON'T DELAY, WRITE NOW.

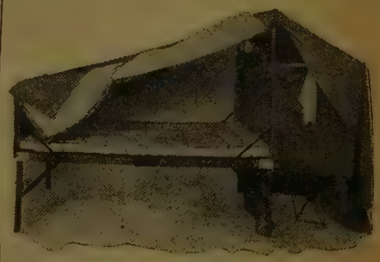
H. L. WAGNER
Descanso (San Diego County), Cal.

PREMO
Film Packs
Developed

An entire pack, 12 exposures, size 2¼x3¼, 25c; 2½x4¼, 30c; 4x5, 35c. Let our careful, experienced workmen develop your next Film Pack. We also make Velox prints, of course.

HOWLAND & DEWEY COMPANY
(Eastman Kodak Company)
510 South Broadway LOS ANGELES, CAL.

High-grade vulcanizing, large stock of new and used tires. Write for price list.
R. B. TIRE REPAIR SHOP (Inc.)
1049-51 So. Main St.
Los Angeles



MUSSO'S
"AUTO-HOME-CAMP-BED"

A tent, a bed, and a dressing-room all in one. Entirely independent of the car. Double bed, with sagless wire springs, and selected oak frame with steel-reinforced aluminum joints. Sectionally quilted feather mattress. Adjustable curtains at both sides and at the foot—and a special mosquito curtain is furnished with every equipment. A dressing-room at the head of the bed is another interesting feature.

Whole outfit rolls into a small, compact bundle that fits to the running board, or may be carried on trunk rack or anywhere without trouble. Send for illustrated folder.

NOT ONLY A CAMP BED

but an ideal sleeping berth for your porches, lawns and yard at home; by leaving top structure off it serves as a regular bed for indoors.
Solves the problem of housing your help.

F. G. MUSSO
194 W. Santa Clara St.,
San Jose, California.

HAWKEYE
MOTOR TRUCKS

The truck shown below represents the 2-ton Hawkeye with all-around farm body.

We are selling many of these to farmers everywhere for all-purpose farm hauling.

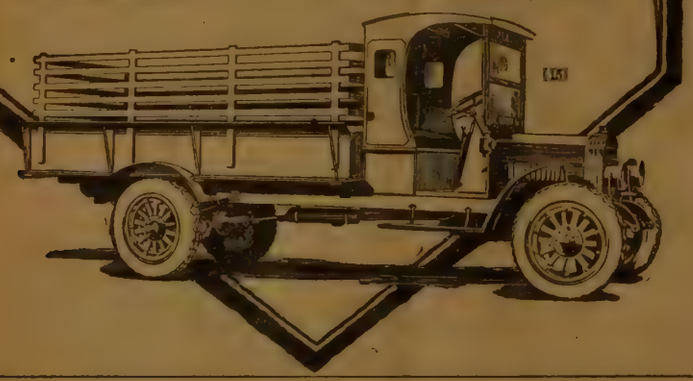
Hawkeye Trucks are built to stand up under the rough and tumble conditions under which a truck on the farm must be operated. There is a big difference between driving a truck over the smooth paved streets of a city and driving it over the rough roads of the country and the bumps and hollows of the farm.

Quality Tested Units

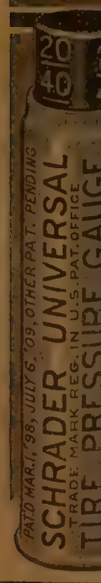
Buda Motor — **Gemmer Steering Gear**
Clark Internal Axle — **Eiseman High Tension Magneto**
Fuller Transmission — **Columbia Axle**

For getting live stock and crops to market, the Hawkeye is a mighty good investment. ***Write for prices and full information.***

Hawkeye Truck Company
630 Sixth Street :: SIOUX CITY, IOWA



Your Tires!



It is not enough to fill your tires up to the requisite inflation—they must be kept at that inflation. A tire may be below pressure and yet look and feel fully inflated.

Take no chances. Insufficiently inflated tires mean not only rapid destruction of the tires themselves but wasteful consumption of gasoline. It takes sometimes as much as 25% more gasoline to pull a soft tire over the road.

Measure your tire pressure daily with a

Schrader Universal Tire Pressure Gauge
and be sure.

Price in U. S.
$1.50

WITTE

2 H.P. ENGINE PULLS 2¾

$39.95 NOW

Direct from Factory to You

ALL SIZES AND STYLES
2, 3, 4, 6, 8, 12, 16, 22 and 30 H-P.

LOW PRICES

Don't wait if you need an engine for any purpose. NOW is the time to buy.

Life Guarantee Against Defects

Big surplus horse-power. Above price includes engine complete on skids, ready to operate when you get it. Safe delivery guaranteed. Immediate factory shipment. Write or wire for big, new catalog of these wonderful engines.

WITTE ENGINE WORKS
3121 Oakland Ave. KANSAS CITY, MO.
3121 Empire Bldg. PITTSBURGH, PA.

"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Note ad on another page of this issue.

FISH Salmon in brine, 100 lbs., $14.00. Shipping weight, 175 pounds.

Smoked Salmon, 20 lbs., $4.00. Dried Codfish, 10 lbs., $1.75. T. A. Beard, 4322 Winslow Place, Seattle, Washi

Teams or Trucks for Hauling

ASK this question of the average business man: "What branch of industry is the largest user of motor trucks today?" The business man feels that there is not much room for argument; the answer is too obvious! "Who, but the retail merchant can be the largest user?" he asks. He calls attention to the big fleets of motor trucks operated by the city department stores and the innumerable individual trucks owned by the small merchants. The merchant must be the chief user, he contends. No? Well, then the manufacturer, of course. (This with patronizing condescension, for if it isn't the merchant it must, he thinks, be the manufacturer.) But—he's wrong again.

The American farmer is the largest user of motor trucks in the world. Reliable statistics, compiled for the year 1917 showed that there were at that time 79,789 motor trucks engaged in hauling farm products. The manufacturers came second with a total of 75,928 motor trucks to their credit, and the retail merchants third with a total of 74,486. It is estimated that during 1918 approximately 350,000,000 tons of farm products were handled by motor trucks by the farmers and market gardeners of the United States.

The motor truck has attained a place of such importance and prominence on the American farm that during the past year the United States Department of Agriculture conducted an extensive country-wide investigation to determine the practical value of the motor truck to the farmer. The result of this investigation was published in the Monthly Crop Report for October, 1918, issued by the United States Department of Agriculture. This report showed that the ton-mile cost of hauling farm products with motor trucks is the greatest argument in their favor.

As shown in a recent article in Orchard and Farm, wheat and corn have again and again been hauled in trucks at less than half the cost of haulage with teams. The government report shows that in the South the haulage of cotton with horse and wagon cost the planter 48 cents per ton mile, whereas he is now doing the same work with the motor truck at the nominal cost of 18 cents per ton mile.

Aside from its value as an economical transport unit for handling crops, the motor truck is used very extensively for delivering livestock to the big packing plant centers. One reason for the popularity of the motor truck in this branch of farm transportation is that livestock shrinkage saved by this method over horse and wagon or rail shipment frequently amounts to enough to offset the cost of motor truck operation

The most recent development in rural motor truck transportation is the rural motor express. In Iowa alone there are 187 motor trucks operating on regular advertised schedules, serving the farmers along the routes covered. In Arkansas, one rural motor express concern covers a route of 100 miles and hauls mail to twelve inland postoffices.

The American farmer is the largest producer in the world; it is only natural, therefore, that he should be the largest motor truck user. His need for this form of transportation is greater than that of anyone else. And with the building and development of good roads he is certain to maintain the lead he has already gained.

If we ask farmers what their biggest problem is today, nine out of ten will say the shortage of help; there isn't enough help to go around and there isn't time enough to do all the farm work that ought to be done.

Reducing Unprofitable Hours

Under present conditions the conservation of time is of greater importance than ever to the farmer. An hour saved here, another there, means money in the course of a year.

Time spent working in the field is directly productive; it results in greater crop returns. Time spent on the road, on the other hand, is in a sense non-productive. To reduce this time so that the greatest possible amount of field work can be done, is the constant aim of the progressive farmer.

The best way to learn whether or not a motor truck would be a profitable investment in your own business is to get in touch with reliable dealers and allow them to present facts and figures. Argue with these dealers; make them prove that they are right, ask them to give you examples of ownership by farmers under similar conditions to yours; and if they convince you, do not hesitate to invest; for just this step has brought increased returns and greater satisfaction to thousands of agriculturists throughout the land.

The Truck on the Range

One of the greatest fields of usefulness for the motor truck is in connection with the range stock-raising industry. We hear more of the use of trucks on the highways and in the cities or in the haulage of perishable produce to market. But throughout these Western States, hundreds of trucks are daily making grueling trips over rough mountain roads; through desert sands; up and down rocky canyons, and across rushing streams, to carry supplies, salt, feed and camp equipment to the great herds of sheep and cattle and the men who are tending them. In New Mexico is a successful sheep man who has maintained from 5000 to 20,000 head of sheep on the range for more than twenty years; in this time he has gone through some very trying periods, and until recently, depended entirely upon horse transportation.

To ask him what motor trucks have done for him would be to receive the assurance that they had revolutionized his business. And certain it is that he will never again know many of the travails that better transportation methods have removed from his calling.

The pleasure car was the first step in his conversion. A trip from town to his headquarters once meant a hard day's drive. Now it is a matter of three hours. But it was not until he had used a motor car for personal trips for several years that he was converted to the idea of employing trucks to haul supplies.

Perhaps the high prices of wool and mutton account, to some extent, for his younger and more prosperous appearance, but be that as it may, he has certainly become a less worried, more wealthy, more contented, and happier man since the motor replaced the horse at the head of his caravans.

McQUAY-NORRIS

PISTON RINGS

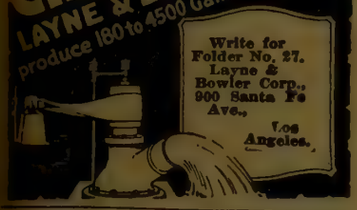
Every Farmer should have a copy of our free booklet, "To Have and to Hold Power." It gives the reasons why better piston rings give more power to automobiles, tractors, trucks, engines, etc. Also explains how they decrease carbon, save gas. Write for it today — you need it. 177

McQuay-Norris Manufacturing Co.
2816 Locust St., St. Louis, U. S. A.

PUMP CHEAP WATER

LAYNE & BOWLER PUMPS

produce 180 to 4500 Gallons per minute



Write for Folder No. 27. Layne & Bowler Corp., 900 Santa Fe Ave., Los Angeles.

CEMENT MIXER FOR THE FARM

Every farm can afford this mixer —THINK

$85

F. O. B. Los Angeles

Drive from any small power plant

The Brown-Bevis Co., Inc.
422 EAST 3RD ST., LOS ANGELES, CAL.

NEW TIRES FOR OLD ONES

You can make new puncture-proof tires from old worn ones. We give you a written guarantee of 5,000 miles against puncture. You can save half your tire costs.

DO IT YOURSELF IN 30 MINUTES

Over one-quarter million users in America today of this NEW IDEA in tire construction. Demonstrator Agents wanted.

GIVENS CONSOLIDATED RUBBER CO.
243 Second St. San Francisco

FREE OFFER DEMONSTRATION

CORN HARVESTER Self Gathering for cutting Corn, Cane and Kaffir Corn. Cuts and throws in piles on harvester. Man and horse cuts and shocks equal to a Corn Binder. Sold in every State. Price only $25 with fodder binder. The only self gathering corn harvester on the market that is giving universal satisfaction.—Dexter L. Woodward, Sandy Creek, N. Y., writes: "3 years ago I purchased your Corn Harvester. Would not take 4 times the price of the machine if I could not get another one." Clarence F. Huggins, Sycamore, Okla.: "Works 5 times better than I expected. Saved $40 in labor this fall." Roy Apple, Farmersville, Ohio: "I have used a corn shocker, corn binder and 2 rowed machines, but your machine beats them all and takes less twine of any machine I have ever used." John F. Haag, Mayfield, Oklahoma: "Your harvester gives good satisfaction while using filling our Silo." K. F. Bueguits, Otis, Colo.: "Just received a letter from my father saying he received the corn binder and he is cutting corn and cane now. says it works fine and that I can sell lots of them next year." Write for free catalog showing picture of harvester at work and testimonials.
PROCESS MFG. CO. Salina, Kansas.

Weed Control

(Continued From Page 25.)

is very injurious to plant growth, and care should be taken to buy only the best seed on the market. When dodder occurs in a field the only practical method of eradication is to cut the plants growing on the infested area, gather them into a central pile, allow them to dry and then burn them. The burned area should then be allowed to stand until the following year, when it can be plowed and resown to a commercial crop. It is important to check the dodder before it goes to seed, for when the soil is infested, it is very difficult to accomplish its eradication.

The lawn around old Fort Sutter in Sacramento, became infested with dodder last spring. Constant mowing did not seem to check the spread of the pest, and the result was a series of reddish-brown patches in an otherwise beautiful lawn. Iron sulphate was finally suggested as a remedial agent, and was applied at the rate of one and one-half pounds to a gallon of water. The grass was not seriously damaged and the dodder was completely destroyed.

Annual Weeds

The methods of control which have been mentioned for the four pests treated in this article apply to annual weeds as well. The Russian thistle is sometimes a serious menace to crops. Yellow star thistle does considerable damage in Northern California, and the "bracted plantain" is often a pest in lawns and alfalfa fields. Where these weeds occur in large numbers, considerable difficulty may be experienced in controlling them. In any case, however, the first recourse should be prevention of further infestation by stopping the seed supply. Seeds may come from the overflow of rivers. In such cases only community or State action will bring about practical control. Weeds may be found in agricultural seeds. Under these conditions the control is within the power of the purchaser. Weed-infested seed is high at any price.

If the source of re-infestation is within the farmer's control, he can then proceed to employ means to destroy the plants already growing on his property. Sheep, goats, hogs, summer fallow, cultivation, crop rotation, fertilizers, smother crops, or burning, when properly used, are valuable agencies in weed control. The Farm Bureaus, through bringing farmers together to talk over their mutual problems, can assist in spreading the gospel of weed-control. The County Horticultural Commissioner or the Farm Advisor can also help in the weed campaign, and the State Commissioner of Horticulture is always willing to do everything possible along this line.

The loss from weeds is not as apparent as that from insects or disease, but it is equally as severe in many sections of California, and a constant fight should be waged to keep these, as well as other Bolsheviks under subjugation. The result will be better crops, fewer pests, and greater prosperity for California.

A rank growth of weeds becomes an asset when plowed under before they make seed.

Startling, If True

Few of the narrow critics who try to fasten the blame for high food prices upon the farmers, display the sense of humor that must be credited to an Illinois agitator. He accuses the local milk producers' association of raising the price of milk "because the grass was so high during the war."

The FRUIT GROWER says=

"for tree planting genuine GIANT is most satisfactory"

The Giant Farm Powders—Eureka Stumping and Giant Stumping—loosen and pulverize the soil instead of packing it and throwing it high in the air.

Western fruit growers have used hundreds of tons of these Giant Powders for blasting beds for trees. They have proved that blasting with genuine Giant Powders provides free drainage, increases moisture-storage capacity and insures vigorous growth and early bearing.

"My trees planted three years ago in beds blasted with Giant Powder are 75 to 100 per cent bigger and better than the trees that I planted in dug holes," writes H. H. Smith, Oregon City.

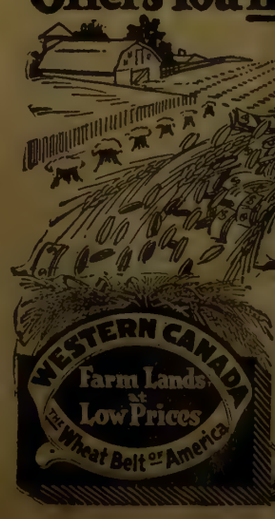
You will enjoy reading "Better Farming with Giant Farm Powders." It describes all the new and money-saving methods of blasting beds for trees, subsoiling established groves and orchards, clearing land, ditching, etc. Write for it now.

THE GIANT POWDER CO., CON.
"Everything for Blasting"
215 First National Bank Bldg., San Francisco
Branch Offices: Denver, Portland, Salt Lake City, Seattle, Spokane

GIANT

STUMPING FARM POWDERS EUREKA

Western Canada's "Horn of Plenty" Offers You Health & Wealth



Western Canada for years has helped to feed the world—the same responsibility of production still rests upon her.

While high prices for Grain, Cattle and Sheep are sure to remain, price of land is much below its value.

Land capable of yielding 20 to 45 bushels of wheat to the acre can be had on easy terms at from $15 to $30 per acre—good grazing land at much less.

Many farms paid for from a single year's crop. Raising cattle, sheep and hogs brings equal success. The Government encourages farming and stock raising. Railway and Land Co's. offer unusual inducements to Home Seekers. Farms may be stocked by loans at moderate interest. Western Canada offers low taxation, good markets and shipping; free schools, churches and healthful climate.

For particulars as to reduced railway rates, location of land, illustrated literature, etc., apply to Supt. of Immig., Ottawa, Can., or

GILBERT ROCHE,
3-5 First St., Sheldon Block, San Francisco, Cal.
Canadian Government Agent

MOLINE WIDE SPREAD SPREADER

With Straw Spreading Attachment

With this spreader you can drive through doors and narrow places, as the box is only 38 inches wide, yet you can spread the manure in a wide even sheet.

It is low down, easy to load, strongly constructed, light in draft, and the second beater thoroughly pulverizes the manure, spreading it in a wide, even sheet beyond the wheel tracks. One lever operates the entire spreader.

This spreader can also be equipped with a straw spreading attachment which is illustrated here. It is easily attached and spreads straw in a wide, even sheet, as thinly as you desire, even on windy days.

Straw is worth from $4 to $8 a ton as fertilizer and as a top dressing for winter wheat.

You can make more profit from your manure and straw with this Moline spreader.

See your Moline Dealer now about getting one or write us for full information.

The Moline Line of Implements
Plows (steel and chilled)
Harrows
Planters
Cultivators
Grain Drills
Lime Sowers
Mowers
Hay Rakes
Hay Loaders
Hay Stackers
Grain Binders
Corn Binders
Pitless Scales
Spreaders
Wagons
Moline-Universal Tractors
Stephens Salient Six Automobiles

MOLINE PLOW CO., MOLINE, ILL.
MANUFACTURERS OF QUALITY FARM IMPLEMENTS SINCE 1865

4th ANNUAL TRACTOR AND IMPLEMENT DEMONSTRATION

· 1919 ·

SEPTEMBER 16th. TO 21st. INCLUSIVE

= MELROSE AVENUE and CRESCENT AVENUE LOS ANGELES

P.E. Cars from Hill Street Station direct to DEMONSTRATION GROUNDS via Sunset Boulevard

DEMONSTRATION CONTINUOUS DAILY

From 9 to 5 - Exhibits by leading tractor · implement · motor · automobile · oil · accessory and electrical distributors

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ORCHARD and FARM

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250—SPRING PIGS—250

That have been mated with extreme care and properly raised and fed. The big, tall, rangy, high-backed, big-framed kind that can carry an awful load of pork and walk off with it. We have on our Orland ranch the sires and dams of the $1100 sow and $1000 boar recently sold at San Jose sale. WHEN YOU NEED GOOD DUROCS, WRITE US.

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SAFETY RAZOR BLADES made much better than new. Any kind of blades 3 cents each. Mail blades from any postoffice. Velvet Edge Safety Razor Sharpening Co., 717 So. Main, Los Angeles, Cal.

DULL BLADES RE-EDGED 30c doz. Send for mailing box. Howard Specialty Works, Dept. B-93, Los Gatos, Cal.

A Rising Young Hog Breeder

FROM the Olympic games to the hog-raising game was the remarkable leap made by George Horine, successful Merced county farmer and formerly champion high jumper of the world. In thus upsetting precedent, he proved the truth of the old adage that it is not always the man born to the soil who succeeds as a farmer. For Horine didn't know a Fresno scraper from a side-delivery rake when he deserted the city business career in which he had embarked after retiring from athletics, and undertook the raising of hogs.

Back in 1912 Horine, while attending Stanford University, smashed a world's record in the high jump, that had stood for twenty years. Four years later, after touring Europe with the American team competing in the Olympic games and, later, trying his hand in the sporting goods business in San Francisco, he obtained twenty acres of irrigated land near Winton, Merced county, and went immediately at the task of improving it. He did not know much about farming then, but what he has found out since the beginning of his apprenticeship, would fill a large book.

Without aid he laid practically every stick of lumber into place on his ranch buildings and house, cleared the land and planted his first crop. From the beginning he has been successful, and despite his early handicap of meager practical knowledge he has met his difficulties as they arose and believes his future holds great promise.

Today his pure bred herd consists of 13 brood sows and a herd boar. Every animal is a registered Duroc-Jersey of the moderately large utility type, capable of making quick gains. His aim has been to secure large litters with early maturing, easy-feeding qualities and in following out his ideas, he has met with unusual success.

His system of feeding, developed from his own experiments, has been to give the hogs the run of an alfalfa pasture of five acres. In addition, he is particular in seeing that they get clean, fresh water and a grain ration made up of soaked, rolled barley, hand-fed in troughs at the rate of two pounds per 100 pounds of live pork, per day. The growing pigs also receive tankage and mineral matter from self-feeders, to the end that their health and bone development may not be impaired.

The brood sows on the Horine Ranch receive a special ration two weeks before farrowing, middlings and oil meal supplementing a part of the whole grain ordinarily fed. The gilts are bred to farrow at from 14 to 16 months.

Only the culls are fattened for market, all first-rate stuff being sold for breeders. The pigs, according to the athlete-farmer, frequently attain a weight of 200 pounds in six and one-half months. These market hogs are fattened on alfalfa and milo-maize, raised on the ranch. (The barley, making up part of the growing and maintenance rations is purchased outside. Some corn is being raised this year for feed).

Horine is not only interested in hogs, although these have received his chief and considerable attention from the time he landed at Winton. He has a five-acre field of alfalfa, fenced hog-tight for pasture, with five acres more checked and leveled, ready for early planting. He has, further, twenty acres of corn and eight acres of beans under cultivation. In addition he has planted seven and one-half acres of young almonds.

It is his plan to branch out and experiment with the fruit-raising end of the farm game. He contemplates early planting of twenty-seven and one-half acres to almonds, twenty acres to grapes, twenty to peaches and fifteen to figs.

Further than all this, Horine has raised some 250 White Leghorn pullets during the spring months and expects to add appreciably to his income from the eggs they lay. All of the chicken feed is, of course, raised upon his ranch.

And all this, the former champion high jumper claims, represents only the beginning. He is ambitious, young and healthy and in ten years believes that he will have reached the state of absolute independence.

Mystery of Granite Mountain

(Continued From Page 9.)

He hurried towards his office, calling upon several of his friends as he ran, and yelling to one of his aides to bring horses. In spite of his voluminous profanity and expenditure of energy, however, it was nearly twenty minutes before he succeeded in getting together five men with good horses and arms, to accompany him. And by the time he was prepared, the brothers had fully thirty minutes' start. As the little posse clattered out of town in a whirl of dust, the Sheriff took occasion to look about for Mart. The man was not among the crowd that had assembled at his call, and was not to be seen around his usual haunts. No member of the party could tell where he had gone.

Chapter V

Benson thought quickly. The road forked in three directions on the other side of the knoll. Every fork led to cover, such as heavy brush, hills, or tree-filled canyons. The escaped prisoners, he was well aware, had had sufficient time to hide from view in almost any direction, and to double back or turn and follow a new course behind some protective screen. Which way should he go? He could not erase from his mind thoughts of the man, Mart. Suddenly light dawned upon him. Mart, he concluded, must have warned the brothers and either preceded them out of town and taken a different course, or else joined them shortly after they left. And Mart had heard him mention "Jennings" and "Summit" in the telephone conversation. Mart, he recalled further, knew Jennings as one of the deputies in the adjoining county.

By the time the fork of the road was reached, he had made up his mind. Settling low in his saddle and pulling his hat tightly down on his head, he turned his already swiftly-running pony into the Summit road, touched its belly sharply with his spurs, and fairly flew ahead into the deepening twilight, his men strung out in irregular formation behind him.

Soon the flying cavalcade passed the spot where the first evidence of the encounter and the body of the dead horse had been found. They did not swerve nor slow down. The Sheriff's eyes were glued to the road ahead of him. But after the riders had passed, a lone figure cautiously lifted its head above a boulder on the adjoining hillside, watched the swift-moving riders for a moment, and then clambered quickly around the great rock, behind which, it now developed, a horse had been concealed. Leading the animal, the man scrambled with unbelievable agility straight up the broken hill-side, the horse making wild leaps and side-steps, and pawing the loose, gravelly slope in an effort to slacken the insistent bridle-rein.

Before mounting again at the top of the slope, the man dropped quickly to his knees and dug feverishly at the base of a lone tree, where upon throwing aside a quantity of dirt and trash, he uncovered a paper parcel. Stuffing this into his pocket, he sprang upon his horse, cut the beast's neck furiously with his bridle-rein and rode recklessly, his animal sliding and leaping, down the opposite side of the hill.

What Was In the Package?

Who was this man who knew its hiding place? Where were Mart and the two brothers? Who was the mysterious and beautiful girl of the photographs? Why was the duel fought?

You Are a Good Guesser

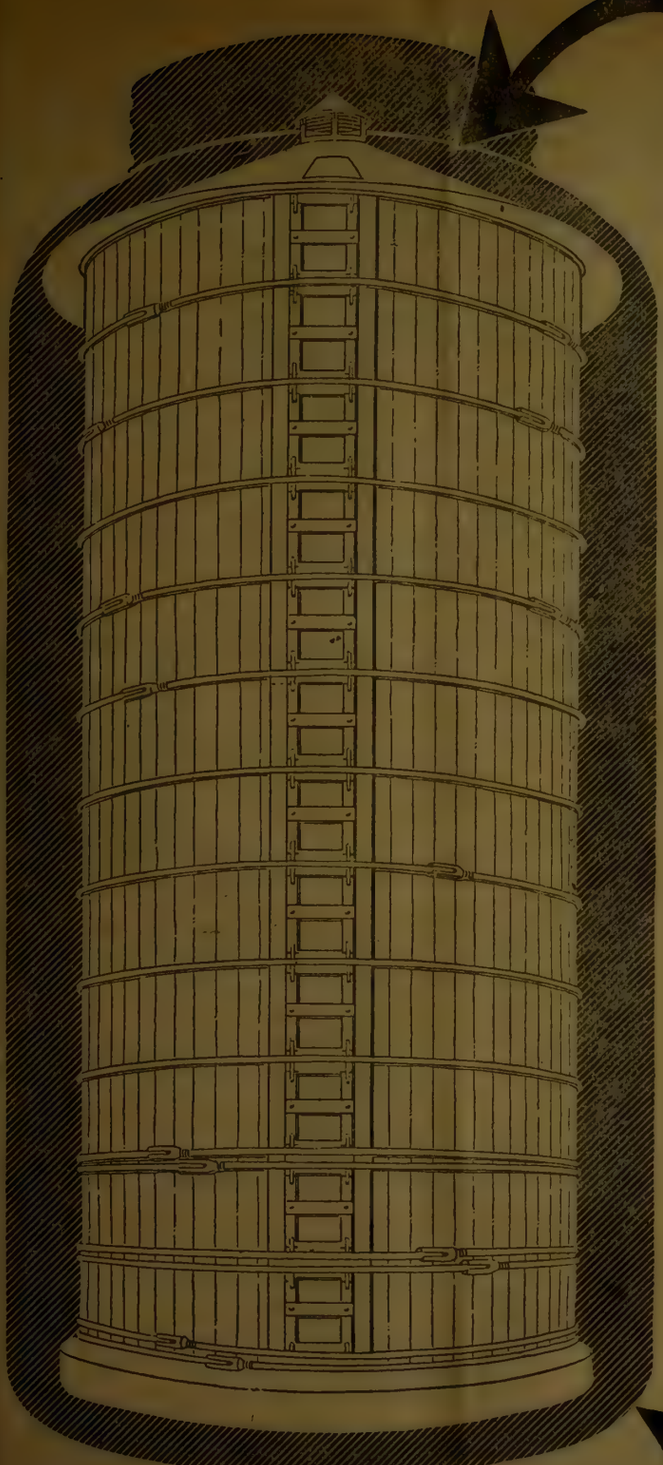
If you can solve the mystery of Granite Mountain, for after taking the reader through five more chapters of concentrated thrills, Mr. Jameson ends his story in a manner that you would never imagine. Don't miss the exciting climax and the unexpected ending, to be published in the September number.

Irrigation Meter

FARMERS, engineers and water companies have long desired a small, accurate, inexpensive water meter for measuring the stream as it flows over the weir. While a number of successful devices have been marketed, the recently patented invention of Ray J. Lyman, a Berkeley engineer, seems more nearly to meet the requirements of water users and handlers than any other type yet developed.

The necessity for some such device is clearly recognized. The friction between water users and companies or ditch-tenders is a matter of common knowledge, and has been largely due to lack of proper measuring facilities. The dissatisfaction of users has resulted in largely doing away with the "miner's inch method" of distribution, whereby the user has paid a flat rate per acre. But even quantity-payment has not smoothed out all the difficulties, because of the inaccuracy of existing methods of measurement. The engineers of the government reclamation service early adopted the system of measuring the water over weirs once or twice a day, and averaging the measurement. This gave more satisfaction than the flat rate method of assessment, but was open to much criticism because of the variation in flow and the impossibility of making a sufficient number of daily measurements to establish true figures.

The principal feature of the new meter is the fact that it is a proportional device, operating on only a small part of the water going over the weir.



CAN FOR YOUR CATTLE

The Mason jar preserves food for your family—the silo preserves food for your cattle. You know that the air must be excluded from a Mason jar else the contents will spoil. The same is true of a silo.

When a silo is filled with green fodder, fermentation takes place, releasing the oxygen and generating carbon dioxide gas. The success of the ensilage process depends upon the action of this gas, which must pass through the entire mass of silage, driving off all air from within as it rises to the top.

If the walls of the silo are not absolutely tight, the carbon dioxide escapes through the nearest outlet, air is admitted and the silage spoils.

THE PACIFIC SILO

is built of heavy redwood staves, bound together by round steel hoops that insure a strong, air-tight container. Each stave is milled to the true circular outline of silo.

Twenty-five years' experience goes into the construction of the **PACIFIC** Silo. We build the **PACIFIC** of redwood because that is the most durable lumber, and the necessary lengths can be obtained free from knots and other defects. Besides, redwood contains a natural preservative, which resists fire and decay, making it the ideal material for silos.

The **PACIFIC** is as near perfect as any silo ever built. It is designed to stand any strain to which it may be subjected. It will not shrink, warp, or leak, and once erected will last longer than the average lifetime. Fill in the coupon and mail it today.

PACIFIC TANK AND PIPE CO.

314 Market Street, SAN FRANCISCO. **908 Trust & Savings Bank Bldg., LOS ANGELES.**

Send me descriptive matter and complete information regarding Pacific Silos and water tanks.

Name .....

Address .....

MOTOR
MENOMINEE
TRUCKS
1 TO 5 TONS
COMMERCE
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1 TO 2 TONS
STANDARD UNITS BALANCED INTO ONE UNIT
DUMP TRUCKS ALL SIZES
COMPLETE LINE OF PARTS FOR ALL MODELS

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DISTRIBUTORS FOR CALIFORNIA AND ARIZONA
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CITY GARAGE, INC., Main 7853 1205 So. Olive St., Los Angeles.

A WADE does 10 mens work Saws 25 cords a day!

A money-maker and hard work saver for land clearers and wood-cutting contractors. One man can move it from cut to cut. Simple and reliable. Hundreds in use all over the U. S. When not in use for wood cutting, the 4 H. P. motor will run mills, feed mills, feed cutters, pumps, etc.

"My Wade Saw is cutting wood for less than 3 cents a cord."—F. J. Williams, Burns, Ore.

"I have sawed through five-foot solid oak logs at the rate of one foot a minute."—N. F. Myers, Laton, Calif.

Quick deliveries from over 100 points throughout the United States.

America must burn more wood for fuel. One Wade will do 10 men's work at one-tenth the cost. Write for free book, "How Dan Ross cuts 40 cords a day," full details and special price.

R. M. WADE & CO.
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COVER CROPS

Melilotus Indica

Common Vetch (vicia sativa)

Canada Field Peas

Our stocks of these are of the best quality obtainable. Our Melilotus is thoroughly scarified, insuring high germination.

Engage your requirements of the above now. Write for prices.

We Pay the Freight

VALLEY SEED COMPANY

1313-1317 Front St.

Sacramento, Cal.

Will You Write an Article for $25?

Why not enter the Orchard and Farm TRACTOR CONTEST? We are offering prizes for the best articles submitted by Orchard and Farm subscribers on the subject: "Why My Tractor Is a Good Investment."

First prize	$25
Second prize	15
Third prize	10
Fourth, fifth, sixth (each)	5

Only one manuscript accepted from each contributor. Story must not exceed 1500 words. Give facts and figures when possible, and comparisons on cost of production as against the use of horses. Illustrations appreciated but not required. Write name and address plainly, and address

Tractor Contest Editor

Orchard and Farm

Examiner Bldg., Los Angeles

Contest Closes Oct. 1, 1919

To Health and Wealth Via "Avocado Avenue"

(Continued From Page 6.)

fat, 20.36; shape, obovate; color of mature fruit, purplish black.

Taft—Seasonal dates, May to October; average weight of fruit, 16 ounces; average weight of seed, 3.13 ounces; highest percentage of oil or fat, 16.53; shape, obovate to pyriform; color of mature fruit, green.

Sharpless—Seasonal dates, October to February; average weight of fruit,

A Box of Fuertes

Ready for shipment. Grown by F. O. Popenoe of Altadena, California, who has attained unusual success with this variety.

20 ounces; average weight of seed, 3 ounces; highest percentage of oil or fat, 24.23; shape, pyriform; color of mature fruit, dark purple moroon.

Puebla—Seasonal dates, December to February; average weight of fruit, 8-10 ounces; average weight of seed, 1.50 ounces; highest percentage of oil or fat, 26.68; shape, obovate; color of mature fruit, dark purple.

It will be noted that the varieties are listed according to the season of maturing and that these seasons overlap. Fuerte is a spring and winter variety, Spinks, Blakeman and Lyon are spring and summer varieties; Taft and Dickinson are summer and fall varieties; Sharpless is a fall and winter variety. The seasonal dates, however, are variable and are influenced by climatic conditions. While the usual dates for the maturing of the Pueblas are from December to February, fruits of this variety under the writer's care in the San Diego district were picked in 1918 from October to December. The first fruits were taken from the trees on October 22nd, and the last on December 24th, and while the seasonal dates of the Dickinson are June to October, they were picked in 1919 in this locality from March to June.

The skin of the avocado, which is thick and leathery in the Guatemalan type and thin and papery in the Mexican type, contains a central, hard seed and yellow edible flesh. The relation between the weight of the fruit and the weight of the seed is important. The larger the proportion of edible matter and the smaller the seed, other things being equal, the more desirable the fruit. The outstanding defect of the Mexican type is the small size of the fruit and the large size of the seed. But as a redeeming quality the Mexican type possesses a distinctive flavor which makes it more agreeable to most palates than many fruits of the Guatemalan type.

The percentages of oil or fat given under each variety are taken from analyses made by experts of the University of California, and the United States Department of Agriculture. As the content of oil apparently increases with the ripening of the fruit and comparatively few analyses have yet been made of the mature fruits of any one variety, it seems more instructive at present to give the highest analysis rather than the average.

As to preference for certain shapes or colors, nothing conclusive can yet be stated as not enough commercial fruit has been produced to decide what the market will demand. Some think that round fruit, such as the Challenge, will be easier to pack, but lemons are not round and they pack as easily as oranges. Similarly, no difficulty is experienced in packing the Bartlett pear for shipment. Moreover, the round fruit usually contains a large seed, while the pear-shaped fruit contains, as a rule, a smaller seed with correspondingly more flesh. The neck of such fruit, furthermore, is all good.

As to color in maturity it seems likely that the market will prefer the purple and maroon to the green. It is not always possible to tell when fruits which mature green like the Taft, Fuerte, Blakeman, Lyon and Perfecto are ripe and ready to eat, but nature has provided a sure sign of ripening for such fruits as the Spinks, Dickinson, Sharpless and Puebla, which turn from green to purple and maroon.

The Growers' Organization

This young industry is fortunate in having behind it an association composed of avocado growers, nurserymen and scientists who hold public meetings twice a year for the presentation of papers relating to the culture of the avocado and for the exchange of ideas and experiences. An opportunity is thus afforded for meeting and questioning the best authorities and for examining fruits and nursery stock. Those who keep in touch with these meetings are insured against loss of time and money in profiting by the mistakes which others have made and in learning the approved methods of culture and production. No horticultural enterprise has ever had a fairer start.

The printed reports of the association, containing all available information about the tree, the fruit, climatic requirements, propagation, soils and sites for the orchard, varieties, yields, pests, food value, methods of serving, and by-products, are of value to every grower of a single tree or of an orchard. The government of the association, the direction of its work, the control of its property and funds, are vested in a board of nine directors, three of whom are elected by ballot of the members at each annual meeting of the association and serve for a term of three years. The members of this board, who serve without compensation and pay their own traveling expenses, meet at frequent intervals. Their meetings differ from those of many other directorates in that they devote more time to the study of important problems relating to the industry than to routine business.

They have a well-defined program for consideration, which is made out with as much care as a financial budget and which covers a year's activities. They have faith in the future of their enterprise. The membership of the board is as follows: C. D. Adams of Upland, T. U. Barber of Puente and H. J. Webber of Riverside, term expiring in 1920; J. M. Elliott of Los Angeles, Lester Keller of Yorba Linda and William H. Sallmon of San Diego, term expiring in 1921; W. L. Hardin of Los Angeles, Mrs. J. T. Stewart of San Fernando and A. F. Yaggy of Santa Barbara, term expiring in 1922.

The orange with all its essential and attractive qualities lacks the food value of the avocado. One director who is an enthusiast on avocado culture, and all are intelligent enthusiasts, has broken forth into verse and hailed the day

"When thru all the States of our dear native land
This fruit, with our orange, shall go hand in hand."

A Very Prolific Lyon Avocado

Being moved from nursery bed. This remarkable two-year-old tree matured 23 choice fruits. At the present market price of $1 to $1.50 each, the crop of the young tree represents an unusual return on the investment.

IF WE SHIP YOU

Indisputable Supremacy in the Tractor Field

Light enough for discing, seeding, harrowing and harvesting.

Weight 5440 lbs.

Ample power for threshing or for filling silos.

Pulls four 14-inch plows.

Remember—to "run on kerosene" is one thing, to BURN kerosene is quite another thing

Provides Plenty of Power When You Need Power

THIS TRACTOR

FOR YOU TO KEEP AND USE AS YOUR OWN, **ON MY EASY TERM PLAN**

WOULD YOU

then agree to show the tractor to ten or more of your friends and tell them of the easy terms and exceptional offer I make, all of which I will explain if you will say on a postal "send particulars of tractor offer," and address your postal card or letter to E. E. GERLINGER, Director of Sales and Advertising, Pacific Coast, Room 524, 112 Market Street, San Francisco, Cal.?

IF WE SHIP YOU THIS TRUCK

The Greatest Truck Value in America Today—Low in First Cost, Economical in Upkeep

1½ Ton

Low in First Cost

Economical in Upkeep

Factory Service Near

2 Ton

Motor Truck or Wagon

[14c or 29c]

For the States of Iowa, Minnesota, the Dakotas, Nebraska, Kansas and Missouri, the estimated cost of hauling wheat in wagons from farms to shipping points averaged in 1918 29 cents per ton per mile. For hauling in Motor Trucks the average was 14 cents per ton per mile. The farmer can easily figure what his saving on that crop alone would be, to say nothing of the economy, convenience and prompt service the truck affords in a hundred other ways.

FOR YOU TO KEEP AND USE AS YOUR OWN, ON MY EASY TERM PLAN

WOULD YOU

then agree to show the truck to ten or more of your friends and tell them of the easy terms and exceptional offer I make, all of which I will explain if you will say on a postal "send particulars of truck offer," and address your postal card or letter to E. E. GERLINGER, Director of Sales and Advertising, Pacific Coast, Room 524, 112 Market Street, San Francisco, Cal.?

The Greatest Truck Value in America Today

B.10.

USE THIS COUPON

WOODTITE LABORATORIES,
MODESTO, CALIFORNIA:

Here is $..... Send me:

[ ] 1 Can Spoktite (auto size).....$1.50
[ ] 1 Bottle Kantmar (5 washes).... 50c
[ ] 1 Can Seat Dressing.....$1.25
[ ] 1 Can Toptite (for mohair tops) $1.50
[ ] 1 Can Toptite (pantasote tops)..$1.50

Name .....

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TOPTITE

$1.50 A TOP

A 1.50 can of Toptite will make your auto top look like new. It waterproofs, preserves and renews the appearance of the fabric. Equally good on any material for tops or seat cushions. Toptite is the acme of perfection as a dependable dressing. No one thing depreciates a car more than a dingy top. Keep it like new by an application of Toptite. It protects your investment and adds to your satisfaction and pleasure.

Remember that Toptite does as much for seat cushions as it does for tops.

KANTMAR
A SCIENTIFICALLY COMPOUNDED
Autowash

FIVE WASHES FOR 50¢

Kantmar Autowash removes grease, stains, spots, dust and dirt quickly and easily. A 50c bottle contains enough for five washes.

It is a scientific discovery for perfect car washing. Will not harm the most delicate paint and varnish. More economical than the old-fashioned soaps, because it is effective only for good results.

Kantmar contains no ruinous alkalis. Washing the car at home is a simply matter and a great economy.

Try it once and be convinced.

SPOKTITE

Swells Wood — Is Not A Glue

---WILL MAKE THEM TIGHT!

Examine your wheels carefully. If the paint is cracked at the hub it indicates loose spokes. That means a dangerous condition.

Loose spokes menace the safety of you and your's when motoring. Keep them tight permanently and assure safety by squirting a little Spoktite into the paint cracks.

It will pay you to examine your wheels frequently and closely for paint cracks. Apply Spoktite at the first sign of a crack and you will always have tight, safe wheels.

Loose spokes cause annoying squeaks and rattles. No need for you to tolerate a condition like that. Get a can of Spoktite; use it when the spokes begin to loosen, and your car will not have to go to the repair shop several days for expensive repairs.

Using Spoktite is like using oil. It is easy, quick work. After applying Spoktite, the wheel is as good as ever within thirty minutes. Wooden wheels always shrink more or less in hot, dry weather, and the spokes get loose. Don't forget the condition of your wheels. Give them the care and attention they require. There is danger if you don't.

If your dealers cannot supply you, we will accept your order by mail.

COMPOUNDED AND GUARANTEED BY

THE WOODTITE LABORATORIES

MODESTO, CALIFORNIA

September, 1919

"California Plums," by Luther Burbank

10c Per Copy

ORCHARD and FARM

ESTABLISHED 1888

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By Country Life Publishing Company

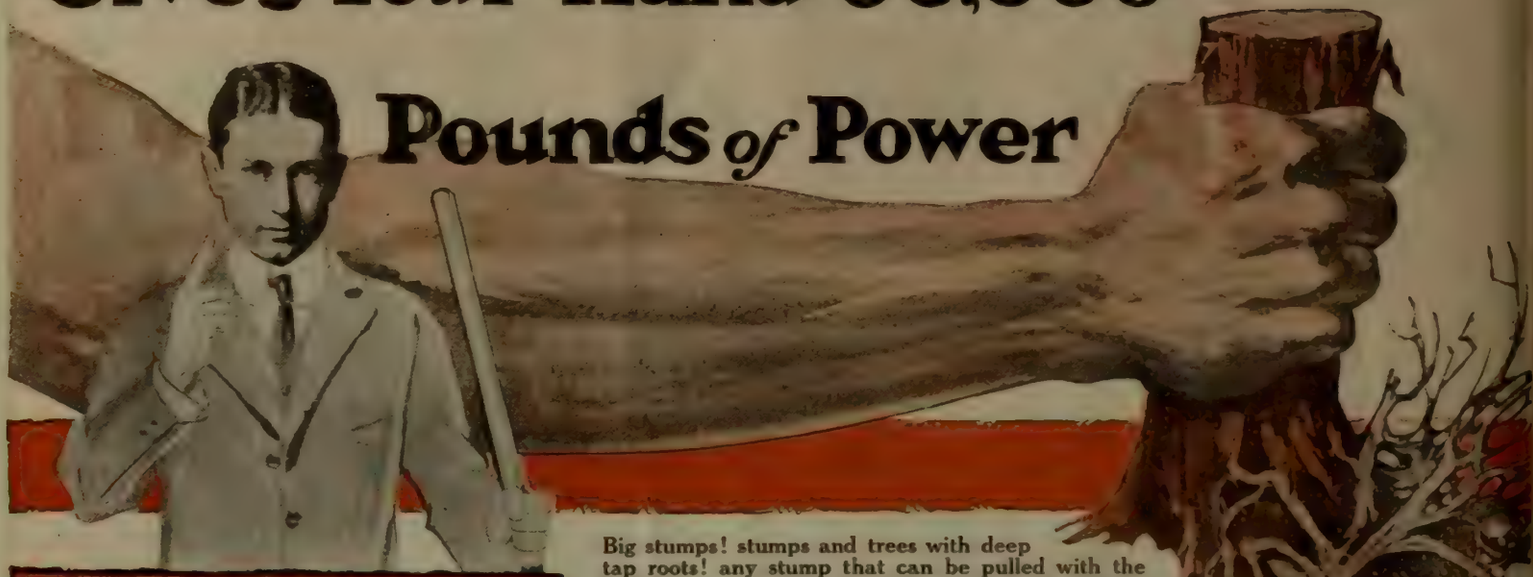
L. A. Tractor Demonstration, Sept. 16-21

Offices
Los Angeles and San Francisco

CALIFORNIA STATE FAIR, AUG. 30-SEPT. 9
Southern California Fair, Riverside, Oct. 7-11

My K Hand Stump Puller

Gives Your Hand 96,000

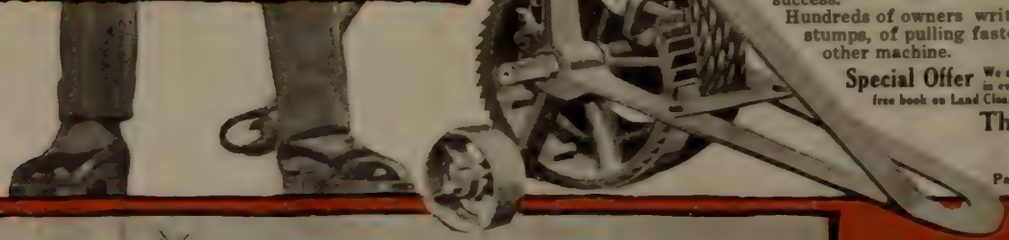


Big stumps! stumps and trees with deep tap roots! any stump that can be pulled with the best inch steel cable!—you *alone* can pull with my "K" Hand Power Stump Puller—*without digging and without the expense of teams and powder.* I guarantee it. I refer you to U. S. Gov. officials. I give highest banking references. If you have stump land, the cheapest way of clearing it is with the

Frank Hance, a *one-armed* farmer of Bowie, Md., pulling a double silver maple 3 ft. 8 in. in diameter at the ground, with deep tap roots. This is an easy pull for the "K," as the cable can be hitched high and the leverage is consequently greater.

HAND POWER

K Stump Puller



How the "K" Pulls Biggest Stumps

The "K" works on the leverage principle of the ordinary lifting jack, except that the power is applied on a cog-wheel instead of a standard. 100 lbs. push on the lever develops a 48-ton pull on the stump—all an inch steel cable will hold. One man operates it alone—no teams to pay for—no walking.

A Mechanical Wonder

Made of finest steel—guaranteed against breakage. Weighs only 171 lbs.—easily carried or hauled about on its own truck wheels. Has two speeds—60 feet per minute for hauling in cable or for small stumps—slow speed for heavy pulls. *Works equally well on hillsides and marshes where horses can not* work

Owners Praise It

H. Sinclair of the Dept. of the Interior, a U. S. Gov. official, writes: "The stump puller is a wonder."

Ernest Thompson Seton, author and naturalist, declares the "K" "a great success."

Hundreds of owners write in, telling of pulling six- and seven-foot stumps, of pulling faster and pulling bigger stumps than by any other machine.

Special Offer We are making a special offer to get a "K" Stump Puller introduced in every neighborhood. Write us today for full information and for free book on Land Clearing and about our Wonderful Drag Saw.

The Fitzpatrick Products Corp.

Box
99 John Street, New York
Pacific Coast Office 182 Fifth St., San Francisco

H. G. Hunzicker of Foster, Wash., pulling a 24-inch fir stump with deep tap roots out of hard ground, without using powder or cutting any roots.

Tear Out and Mail Today

The Fitzpatrick Products Corp.
Box 99 John St., New York
182 Fifth St., San Francisco

Send me full particulars on your special offer and your free booklet on Land Clearing.

Name_____

Address_____

ORCHARD and FARM

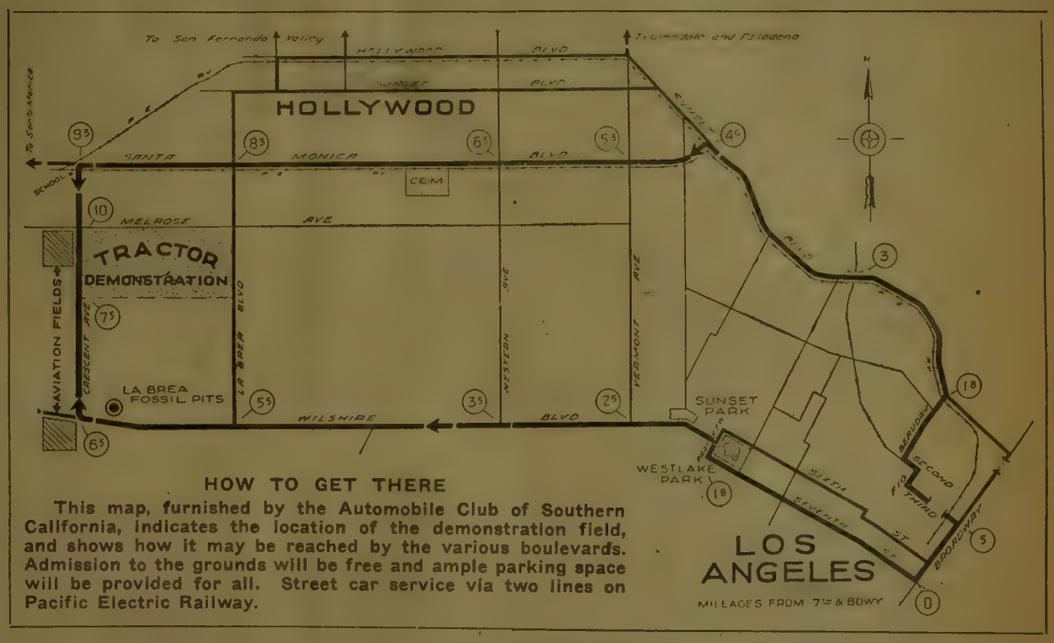
VOL. XXXI. SEPTEMBER, 1919 NO. 9

"More Power to You," Mr. California Farmer!

"MORE Power to You." This is the the slogan of the tractor dealers of California, as through the medium of two great fall exhibitions they plan to bring berofe the agriculturists of the Coast and Southwest the newest in power-farming equipment.

First will come the "still show" of the California Tractor and Implement Association, to be held in conjunction with the State Fair at Sacramento, August 30 to September 9. This exhibition promises to be one of the biggest "drawing cards" of the great California State Fair, and in point of number and variety of exhibits is expected to equal the recent Sacramento field demonstration. There will be no field work, however, and the exhibitors will be limited to such presentations as they can make "under cover." The results of this show will be watched with interest by all followers of power-farming, as much light will undoubtedly be thrown upon the relative merits, from a sales standpoint, of "still" and "field" exhibitions.

It is to the coming Los Angeles demonstration, however, that thousands will look for enlightenment upon the newer phases of tractor development, for some entirely unique ideas will be featured at this show. With a very large attendance anticipated, because of the advantageous location, big advertising campaign and fortunate selection of date, the success of the demonstration is assured. And the members of the Traction Engine and Implement Dealers' Association, which is putting on the great show, have determined that no visitor shall leave the grounds without having been impressed with the reliability and versatility of the tractor.



HOW TO GET THERE

This map, furnished by the Automobile Club of Southern California, indicates the location of the demonstration field, and shows how it may be reached by the various boulevards. Admission to the grounds will be free and ample parking space will be provided for all. Street car service via two lines on Pacific Electric Railway.

A Different Plan

In addition to making things as comfortable and convenient as possible for the visitors, by careful arrangement of exhibits and elimination of so-called "public demonstrations," or competitive plowing exhibitions, the dealers will cater in every possible way to the public demand for "something different" in the way of tractor shows. Realizing that the mere act of plowing up ground with a tractor is no longer a novelty to most persons, the exhibitors will emphasize the importance of the tractor in belt work ,and will show many different kinds of power machinery in actual operation.

This will be the largest working exhibit of power farming machinery ever shown in Southern California, and in addition to the extensive line of tractors will include a display (under a tent 100x350 feet) of trucks, trailers, casings, solid tires, magnetos, lubricating oils and in fact practically every accessory essential to the operation of tractor, truck and automobile.

The original purpose of the association to emphasize the educational features of these annual demonstrations has been strictly adhered to.

List of Exhibitors

Among the exhibitors will be the B. Hayman Company, who will enter a full line of Oliver Chilled Plow Works implements; a complete line of Emerson-Brantingham implements, the E. W. Ross feed cutters, a Planet Jr. line, Forkner cultivators and a new line of Roderick-Lean disc harrows.

The International Harvester Company has listed the 10-20 Titan tractor, the 8-16 and 15-30 International, and a most complete general line of International and P. & O. implements. The 8-16 will be featured.

E. P. Bosbyshell Company will exhibit two sizes of Heider tractors, full line of Rock Island plows, W. W. alfalfa-grinding mill, Clark cutaway harrows, Sandwich hay press, Knapp disc harrows.

William L. Hughson Company will

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The Fascinating Story of California Plums

By Luther Burbank

Written Especially for Orchard and Farm
All Rights Reserved by the Author

THERE are many varieties of plums under cultivation, and their source of origin is more complicated than that of most of our cultivated fruits. The European type, to which all the common older plums belong, such as Damsons, Lombard, Yellow Egg, Imperial Gage, Green Gage, Bradshaw, Golden Drop, Pond, Peach, Columbia, Royal Hative, and many others originated from "Prunus domestica," a native of Western Asia.

Several varieties of the Japanese types have been more recently introduced into California; most of them sprang from "Prunus triflora," supposed to be a native of China. The native American plums have also given rise to numerous cultivated varieties. The native American species that have been cultivated to some extent are as follows: "Prunus americana" of the Northern States; the Chickasaw, "Prunus angustifolia," of the Southern States; the Beach plum, "Prunus maritima" of the Northern Atlantic Coast, and "Prunus subcordata" of the Pacific Coast.

One of Burbank's Newer Creations

This fruit, of a new, hybrid type, possesses qualities which have given rise to the prediction that it would become one of the favorite plums, especially in the Pacific West. Further experiments are being conducted with it.

"Prunus domestica" is the historical plum of the Occidental civilization. It was extensively cultivated by the ancient Greeks and Romans. Those growing at Damascus were mentioned by such writers as Dioscorides and Pliny, and it is from the name Damascus that the word "Damsons" was derived.

The early settlers of America brought plums and other favorite fruits along with them to this country. These European plums found the conditions of soil and climate in this new country very favorable and soon there appeared in many localities escapes from gardens. Seedlings possessing new qualities occasionally were distinguishable among them; these, from time to time, were noted and appreciated by those interested in fruits, who introduced them into cultivation. Among these earlier American varieties were two of the old standard plums, the Washington and the Jefferson. As the years went by new varieties were continually being evolved, until today there are, probably, considerably over 300 different kinds of plums which have been derived from this source. Many of them are superior to any of the old European varieties.

The class of plums derived from these European ancestors is generally referred to by horticulturists as the European, or Domestic class, and it is with this meaning that I shall use the term.

Introduction of Japanese Plums

When California began shipping fruit across the continent, fruit culture entered upon a new era. The industry was given a great impetus and considerable interest developed in the importation and development of new fruits. Since America had long had under cultivation the best fruits that Europe could offer, it was only natural that California should inquire of Japan whether or not she had other fruits worthy of introduction on these shores.

In 1870, or about then, Mr. Hough of Vacaville, Cal., secured some Japanese plums. These afterward became the property of John Kelsey of Alameda, Cal., who raised them for several years. Finally, in 1884, one of these was distributed rather extensively by a nursery company under the name of the "Kelsey-Japan." As this variety was large, of unique form, good color, and very firm flesh, it met with favor and was soon widely known and cultivated.

Soon after coming to California, on a casual visit to the Mercantile Library at San Francisco, I came upon a book written by a sailor who mentioned a red-fleshed plum in connection with a description given of the province of Satsuma, Japan. I became much interested in the plum which this writer had described, and immediately wrote to Mr. Isaac Bunting of Yokohama, who was at the time collecting various plants for me, requesting him to visit Satsuma and look up this curious blood-red plum.

At that time none of the plums in Japan was designated by name; neither were there any nurseries where young grafted plants might be obtained. Fortunately Mr. Bunting timed his visit so as to arrive in Satsuma during the season of plums, and he was successful in finding several varieties in various gardens. He procured and sent to me twelve small seedling trees under number, as they had no names.

Upon the arrival of these little foreign seedlings I carefully planted them out on my place, and within a short time noticed that each one was different in some respects from all the others in growth and habit. During the second season branches from each of them were grafted upon older trees, thus enabling me to obtain results much earlier than otherwise would have been possible.

Luther Burbank

Orchard and Farm Alone

Has the privilege of publishing the writings of Luther Burbank, recognized as the greatest living naturalist and plant breeder, and known the world over for his wonderful plant creations. Burbank is approaching the age of seventy-one. Yet, in his life of ceaseless activity at his Santa Rosa Experiment Farms, he finds time occasionally to prepare an exclusive article, such as this one, for the fortunate readers of Orchard and Farm. Nothing is too good for our big family. No doubt that is why it continues to grow apace. Tell your friends how much Orchard and Farm gives you for its small subscription price. And don't let your own subscription expire, for we have planned the biggest, brightest and best fall and winter numbers we have ever published.

These twelve little seedlings have proved to be one of the most important importations of fruit ever made into this country, for two of our standard plums are from this small shipment; and, from crosses between these two standards and other plums, almost innumerable, other most valuable varieties have already been produced. In fact, these plums have fairly revolutionized the plum industry, especially in the Southern States and on the Pacific Coast, as well as about the Mediterranean, South Africa, Australia, New Zealand and South America.

"Burbank" and "Satsuma" Plums

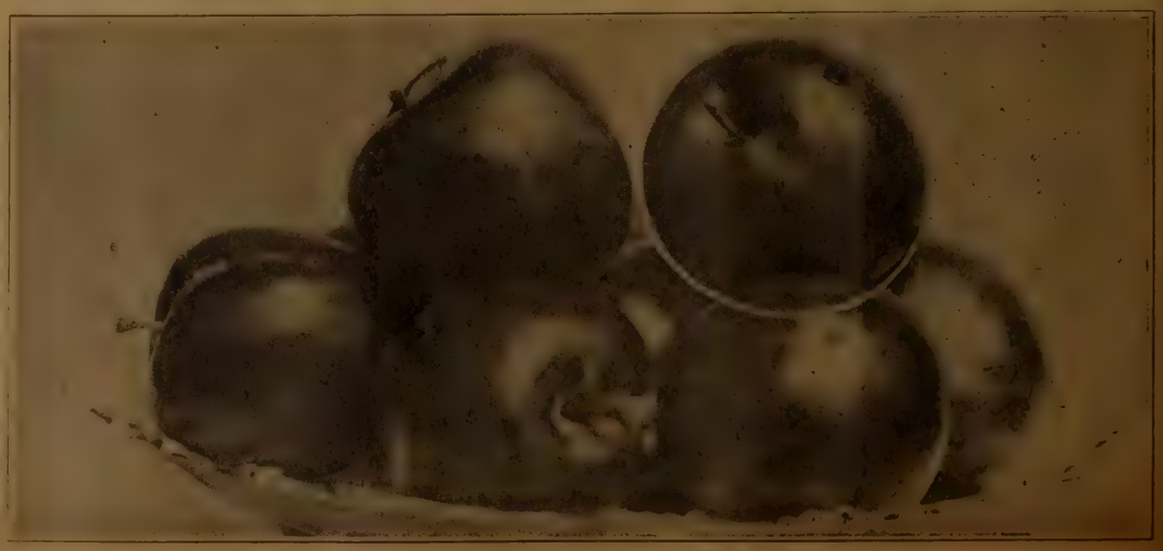
Sample fruits of the best two of these seedlings were sent to Prof. H. E. Van Deman, who was then chief pomologist in the Department of Agriculture at Washington, D. C. This well-known authority named the one now known as the "Burbank" plum; the other received the appropriate name of "Satsuma," in honor of the place in Japan whence it came—and it has proved a deserving compliment to that province.

The "Satsuma" plum has proved to be a valuable addition to our fruits, and today it is recognized as one of the standard plums, being especially popular in Southern California and

(Continued on Page 37)

A Tempting Dish

Perfect specimens of the famous Burbank plum, one of our standard varieties, and the result of years of patient selection and breeding, are shown in the illustration below.



The Mystery of Granite Mountain—

A Short Story by Albert Constant Jameson

IN TWO PARTS—PART TWO

SYNOPSIS OF FIRST INSTALMENT

The sheriff of Sandhills County is startled one afternoon by seeing two wounded men ride into town upon one horse and then fall unconscious into the arms of loiterers in front of the office of Dr. Kurman. While the physician examines them, finding that both are seriously and one dangerously wounded, the officer determines that they are brothers, Enos and Fred Graves, well and favorably known in that vicinity, where they have served as cow-hands for several outfits. He finds that each has emptied his revolver, and accompanied by two deputies, follows their trail.

From evidence found at the foot of Granite Mountain, he concludes that the brothers have fought a duel, one having had his horse shot out from under him and finished the fight on foot.

One of his deputies, known as "Mart," apparently has some different theory.

In the meantime the doctor's wife has removed some papers from the pockets of the injured men, and finds that each brother carried a photograph of a beautiful girl—the same girl, in slightly different poses, she concludes. The pictures are identical as to size, shape and folders.

The brothers slowly recover, but little light is shed on the mystery because neither will say anything about the battle at the foot of the mountain. The sheriff keeps them under arrest in the hope of finding the subject of the photographs and thus making the prisoners talk. Since the boys are very popular with the people, however, his position becomes ridiculous. The sheriff finds Mart's attitude very annoying and stubbornly swears to solve the problem alone.

One day while Mart is visiting his office, the sheriff receives a telephone call from an officer in the adjoining county, and Mart deducts from the conversation that the other officer has located the girl of the photographs. He slips out of the office while Benson is talking and quickly disappears. Benson hurries in search of his prisoners, only to find that they have secured horses at the livery stable, and raced out of town.

Such a long time elapses before he can get a posse together that the brothers have a long start, and the sheriff is undecided as to which road to fololw. Concluding, finally, that Mart must have warned them and remembering that Mart had heard his conversation with the officer at Summit, he concludes to follow the Summit road.

As the sheriff and his posse pass the spot at the foot of the mountain where the fight occurred, a lone figure emerges from behind a boulder and, leading his horse, scrambles up the broken hillside. At the top of the hill he digs feverishly at the base of a tree and finding a paper parcel, stuffs it hastily into his pocket. Then, springing upon his horse, he rides headlong down the opposite slope. The sheriff and his men, unaware of this episode, ride with all speed, in the gathering twilight, towards the town of Summit.

Chapter VI

The Sheriff and his men rode on and on—far into the night. When it seemed as though their jaded animals would not take another step, and still not a trace of their quarry had been found, one of the party ventured a polite inquiry: "Where to, Boss? This here colt o' mine ain't goin' t' walk very much farther, let alone run."

"Them fellers went right on to Summit," shouted the Sheriff. "an' they ain't very fur ahead of us. Hello, what's this?"

Indeed the tired party did not have to travel farther, for, revealed in the hazy light of the rising moon, they soon saw, near the roadside, two horses tethered—and perhaps, a hundred yards back, in a little clearing, detected a faint light, emanating from a cabin window. Benson quickly halted and held up his hand for silence. Then he spoke in hoarse whispers. "Git yer guns loose. Take all th' hosses back, Steve. Now work up on th' cabin f'm all sides an' be ready fer anything. Don't make no noise. Stay away f'm th' house onless I signal."

Benson cautiously approached the window from which emanated the pale gleam of light which at first had attracted his attention. He peered beneath the partly lifted blind. Yes, the brothers were within. But his attention was at once riveted upon a tense situation which was claiming the faculties of the unsuspecting occupants of the house.

Enos and Fred, both pale with anger, confronted a sullen giant of a man, who stood, with his arms raised high above his head, against the opposite wall. The flickering kerosene lamp revealed, above the red-gray beard of the hulking shape, a pair of glittering, though fearful eyes, that followed every movement of a revolver which, in the hands of the younger brother, threatened him into submission.

The watching officer saw Enos search the victim and take away from him a cartridge-belt and knife. Then the older brother stood back, Fred still threatening with the revolver, and both glared at their captive for a full half minute without speaking.

Finally Enos broke the silence, his voice low and vibrant. "Where are they?" he demanded. "What have you done with them?"

No reply came from the surly captive, who had not once removed his steady eyes from the threatening muzzle.

"I guess you'll talk, you——" continued Enos, in hot anger, but the Sheriff did not wait to see what means would be employed to bring forth the desired answer. Slipping quickly around the corner of the cabin, and beckoning to the two men who had placed themselves on the side of the entrance, he suddenly kicked open the door. So quickly was this done, and so intent were the three occupants of the house upon the drama which they (one of them, quite unwillingly) had been enacting, that it was comparatively easy for Benson to "cover" and disarm the brothers.

"It won't take long to clear up this mystery," began Mart. . . . "I'll say in regard to Redbeard there thet I have knowed him fer a long time. . . ."

"Shut up," ordered the Sheriff, as Enos and Fred made a move as though to whisper to each other. "All three of you keep your hands up."

Fred and Enos looked at first worried and confused, but finally upon exchanging glances became immediately stoical. The red-bearded giant asked permission to lower his hands. "I live here," he explained. "They were stickin' me up."

He stretched his arms carefully. "Had me holdin' 'em high fer a quarter of an hour," he continued. "It's lucky you come along when you did. They was fixin' t' torture me into tellin' 'em where I had some money hid. Yes, sir, ye got a couple o' highwaymen this time, sure, officer. Me? My name's Dunning. I bin prospectin' here, livin' alone in this cabin. I was jest fixin' to' go t' bed, havin' been out late huntin', when these two young cut-throats sneaked up on me and had me covered before I knowed what was up. Say, how did you happen along, anyway?"

"I was after them," said Benson grimly. "They're escaped prisoners."

Chapter VII

At these last words, the brothers both started forward, but were roughly thrust back against the wall by the two deputies who were guarding them.

"So that's yer game, is it?" said Benson, standing off and surveying the captives with narrowed eyes. "Holdin' up lone prospectors in the dead o' night, eh? Didn't I tell yu, boys?" (addressing his companions).

Unable longer to contain his anger, Enos broke into a hot retort. "You're wrong again, Benson, you bullheaded fool. Hold this man; don't let him get away; we had reason to want him. He's a forger; a thief; he shot——"

"Shut up," roared Benson, his face purpling with rage, "When I want you to talk, I'll tell you so. I'm on to your game now. We'll go back t' town in th' mornin' and I guess Dunning's story will be enough to put you two where you belong, won't it, Dun——Hello, where is the old man? Guess he stepped outside. Take the prisoners in the back room, boys. I'll be——What's that? I heard a noise at the door. Who's there?"

"It's me—Johnson," was the reply. Then the sound of a stifled, feminine scream reached his ears.

"Come in," he cried. Johnson pushed open the cabin door and gruffly bade his companion enter. A young woman of slight figure, her attitude more defiant than timid, stepped into the room. She was wrapped in a heavy cloak, and a large veil concealed her features. The foot that protruded from beneath her wrap was slender and small; her shoes, although dusty and badly scratched, were dainty and thin-soled. This much, Benson noted in his swift preliminary examination of the new and unexpected arrival.

"Who is this woman?" demanded the Sheriff.

"Don't know, Boss," replied Johnson. "I picked her up at the edge of the clearing, as she was sneakin' up towards the house. All she would tell me was that she'd come from Summit. Thought I'd better take her in charge 'til you could talk to her."

"What were ye doin' out here on this lonely road at three o'clock in the morning?" demanded the Sheriff. The girl only straightened her shoulders and offered no reply.

"Who are you; what do you want here? I am an officer on official business, and I've got t' hold anyone thet kain't explain their business. Answer me now!

"Well, here's another one that won't talk. We'll have to take her with us, I reckon. Johnson, take her into th' back room—not where they've got the boys—the next one."

After Johnson had closed the door of the little room behind him and his fair prisoner, Benson went to the outer entrance and called to the three men who had been stationed at different points about the cabin: "Come in boys. We'll get somethin' t' eat. You, Jack, make some coffee. I'll see if there's any bread in the house. It is almost daylight. We'll be startin' back soon. Wonder who our next caller will be!"

The Sheriff turned to the stove and busied himself with preparations for making a fire. Just as he was about to touch a match to the shavings he had piled carefully on the grate, a head was thrust through the crack of the partly-opened outer-door. "Hello, Benson," cried a cheery voice. The new arrival stepped into the room.

"Jennings!" cried the Sheriff, extending his hand in greeting. "How did you know we were up here?"

"I didn't," answered the newcomer, nodding to the other occupants of the room. "You must 'a' made pretty good time after I talked to you on th' phone."

"Oh, we been here for some time. The Graves brothers beat it out o' town while I was talkin' to you. We trailed 'em here. But how did you happen up this way?"

"The girl," answered the other officer quickly. "I seen her in town before I 'phoned you, and left one of the boys to shadow her, but she slipped away f'm him, an' we lost track of her entirely. It didn't take long, however, to find out which way she had went. We traced her up in this direction. I was comin' up to inquire of the old prospector if he had seen her."

Benson's face lighted up and he slapped his thigh energetically. "I see, now; it's her; now we're gettin' somewheres. Johnson, bring out the girl."

As the deputy appeared from the adjoining room with the young woman, Jennings sprang to his feet excitedly. "That's her; that's the woman we was trailin'. Make her take off her veil and see if I ain't right about the picture." . .

Clutching her scarf, and holding it tightly against her throat, the young woman glanced quickly from side to side and then backed away.

"Hold on, there," said the Sheriff, roughly. "You'll have to show your face, Miss." As she continued her retreat, he reached her side with one quick step, and rudely tore the veil from her hands. He scarcely noticed her blazing eyes, and the fierce anger

(Continued on Page 32)

The Tractor in Alfalfa Growing

THE EXTENT to which the tractor may be a factor in alfalfa production will vary with the conditions under which the crop is grown, and the relation of alfalfa-production to other farm pursuits.

The heavier work of preparing for alfalfa ordinarily can be done more efficiently and more easily with a tractor than with horses. Many farmers have even used the small tractor as a power unit in the various operations incident to harvesting the hay crop, but for this purpose horses will, under existing conditions, continue in favor because of their greater mobility, and because practically all the machinery available has been designed particularly for animal power.

Until more special machinery is available to go with the tractor, through the use of which the farmer may effect a direct saving of labor and hence reduce the cost of production, the tractor will not be able to compete with the horse in these operations.

Where Tractor Shines

In the heavier operation of preparing the land for alfalfa, however, the tractor can be of real service. Particularly is this the case in California, where the average life of an alfalfa field is comparatively short, necessitating relatively short rotations, and hence rather frequent cultivation of the soil.

The success of an alfalfa field and the subsequent cost of irrigation and handling depends largely on the care exercised in leveling and checking for the crop. It is generally recognized that the best time to prepare land for alfalfa is in the late summer or early fall while the soil is dry. At this time less labor is required to do the work and the danger of injuring the physical condition of the soil by puddling is eliminated.

The first operation is to plow the land rather deep, to provide enough loose soil for leveling, and to break up any hard strata of plow-sole which might later interfere with the development of the young alfalfa plants. To attempt to do this work with horses is a slow, heart-breaking, and sometimes impossible task, while the tractor with suitable equipment will usually do the work easily and much more efficiently.

Leveling and checking the land for alfalfa is the most expensive operation in the preparation of the land, the cost varying from $20 to $50 per acre, depending on the amount of grading necessary. Here again the tractor may greatly facilitate the work, though it will not necessarily reduce the cost.

Reduction of Cost Possible

However, with the present labor shortage, where the area to be prepared is large and the time element is a factor, the tractor, with tractor equipment is practically indispensable, as two men thus equipped will accomplish more than three or four men with teams. Where the conditions are such as to permit the use of large outfits the cost may actually be reduced.

In renovating alfalfa during the dormant season it may in some cases be advantageous to use the tractor, though the work is not so heavy as to render it especially difficult. It must be done, however, during the winter months when the surface of the soil is dry, which condition often prevails only for a short period of time, necessitating the maintenance of considerable labor and equipment which may be rushed in when conditions are favorable. In this case also, therefore, the tractor may serve largely as a means of hastening the work and eliminating labor.

In conclusion, it may be said that while the tractor may be used to advantage in several stages in the production of the alfalfa crop, few cases are reported where hay-farmers have been enabled entirely to do away with horses.

In case a tractor becomes desirable or necessary for some of his work it might be more economical for the alfalfa grower to contract the work done than to acquire the outfit himself. On the other hand, the tractor is coming to be looked upon as a necessary part of the general ranch equipment and should be used in all cases where it will speed up the work and reduce labor or the cost of operation.—Prof. B. A. Madson, University of California.

The Great California State Fair

SACRAMENTO is a mighty busy place as we go to press, for the city and its thousands of visitors await in the most interested anticipation the opening of California's greatest State Fair.

The mammoth $300,000 main State agricultural building has received its interior decorations and will stand forth as a lasting reminder of California's agricultural greatness. The Fish and Game Commission is building a permanent exhibit, using as a model the beautiful Sierra scenery. The mural decoration will typify the scenery from Mount Shasta to Mount Whitney and all the beauties of the California Sierras will thus be pictured in miniature form.

Miniature mountain lakes, filled with fish and fed by turbulent streams, will give the visitor a better idea of the scenic wonders of California than will be possible to obtain in weeks of travel. By means of intricate lighting effect and diffused rays the exhibit will receive the light of the morning sun, and as the day advances, the changing light will keep pace. It will be possible for the visitor to stand on a foot-bridge near an emerald mountain lake and watch the shadows of the setting sun play on the side of the Sierras, as their tints change from gold to all the shades of a beautiful mountain sunset.

Mammoth Tractor Show

One of the features of the Fair this year will be the tractor and implement exhibit, to be arranged under the auspices of the California Tractor and Implement Dealers' Association. More than 60,000 feet of floor space will be devoted to this department.

In addition to the literature and sales talks offered by the various farm machinery representatives, there will be issued for the education and enlightenment of the interested visitor a special book, compiled by the Fair Association, in which will be listed and described all implements and tractors shown. The book will include a trouble chart, for use in caring for gas engines, as well as other useful information.

The livestock show promises to eclipse all previous exhibits. Among the most interesting of the entries is the beef herd being finished by Alex. McDonald of the University Farm, Davis, for the great Chicago International. McDonald won fame for himself and California by conditioning the famous grand champion steer, "California Favorite." Stockmen will enjoy seeing the finishing touches being put on this year's Chicago entries.

Big Swine Entries

Even at an early date it became apparent that the hog department would include double the number of entries shown in any previous year. Of the different breeds, the Poland China appeared to head the list, with 300 entries. The boys' pig clubs have made heavy entries of various breeds.

The horse show is expected to prove a pleasant surprise to seasoned fair visitors, for with the addition of several notable new entrants, including Anita Baldwin of Santa Anita Rancho, this department has been greatly strengthened.

The Dairy Division includes one-third of all the entrants, with the Holstein breed in the lead among the 108 contestants. Competition in the Holstein and Guernsey divisions promises to be particularly stiff.

Carrying out the general educational scheme of the Fair, the Yolo-Sacramento Counties Cow Testing Association will give an educational exhibit, showing how the unproductive cow may be "canned" from the herd, and will demonstrate desirable types of dairy animals. This exhibit will be planned with a view to stimulating the breeding and handling of more productive stock.

A Real "State" Fair

One encouraging feature of this year's fair is the diversity of exhibits, which include many from the southern part of the State. The feeling is general that this is more truly a "State" fair than any previous one. Emphasis will be placed, not only on established industries, but upon new and potential enterprises, such as the raising of cork oak and licorice root, commodities now imported, which it is believed may be raised profitably in this State.

The poultry and pet stock exhibits will be unusually complete. These and the small livestock entries will be housed in renovated, improved quarters. In the handling of the various small exhibits, as well as the carload lots, efficiency will be the watchword of the officials, and it is expected that

(Continued on Page 35)

Why We Must Foster Agriculture

BY WM. D. STEPHENS
Governor of California

A Timely Message Prepared Especially for Orchard and Farm

NEVER before in the history of the world has the realization of humanity's utter dependence on the agriculturist been so acute as it is today.

The critical situation of civilization in these times will be determined as the farmer may succeed in providing food. And it is not alone in the production of eatables that the farmer is important. He is the bulwark of governments and of peace and order.

I look for a rapid emergence of our country from the topsy-turvy conditions the great war created. I have an abiding faith in our people. And it is in the good "horse sense" of the American farmer that much of my reliance is placed.

I regard it as essential not only as a matter of fair play and just attention, but also as an urgent demand for the well-being of all the people, that city and townspeople, as well as the country population itself, give aid and direction generously and energetically through our governmental agencies in the promotion of agricultural industry.

Solution of the high cost of living lies largely in increased and better production upon our farms.

During my administration as Governor I hope to bring about an important expansion of activities for the benefit of land production.

We have made an excellent beginning in the recent creation of the Department of Agriculture, and, frankly, I have great expectations as to what it will be able to achieve. All agencies of the State government dealing with agriculture have been brought into one organization and the co-ordination that has resulted is highly gratifying. System and economic administration have been worked out in most satisfying fashion.

As I had expected, a new zeal has been engendered in the various branches that were thus placed in one department. Cooperation and "team work," such as were not possible when they functioned as separate units, is now the natural scheme of things. Each branch has been striving its utmost, under separate statutes, filling its own little sphere, and handicapped in its efforts to obtain the encouragement and aid that were needed to cope with the problems that came thick and fast.

Now they are all part of a strong organization which will be formidable in commanding attention to the needs of agriculture and will constitute a new driving force for effective accomplishment.

There is in this work of our Department of Agriculture a great field for service. The value of science and expert authority is now generally appreciated. Our farmer has come to recognize it, and the distrust with which he regarded a farm adviser some years ago has now disappeared.

The battle with pests must be maintained vigorously, and in the future our Legislatures must make more liberal appropriations for this work. The State must make a beginning in keeping its highways free of noxious weeds and grasses, and then the demand must be made that the same be done on county roads. Irrigation and canal companies must likewise be required to stop the spread of these weeds and grasses that have become so serious a menace.

Following the adjournment of the last legislature, I approved small appropriations for experimentation against a new pest in the walnut groves and for inspection of seed potatoes. It was a problem to provide even these small sums.

I am not content with the mere issuance of bulletins for the enlightenment and instruction of farmers. The farm adviser is a further and efficient help. Our State officials must carry their work directly to the farmer, and he must receive his information and counsel through personal contact and open demonstration.

I cannot point to a more advantageous use of public funds or employment of the enegries of the State officials than aiding the farmer to grow more bountiful crops and to protect them until the harvest time.

They Will All Be at the Show! Will You?

SAMSON SIEVE-GRIP PULLING COMBINE HARVESTER

BEEMAN GARDEN TRACTOR

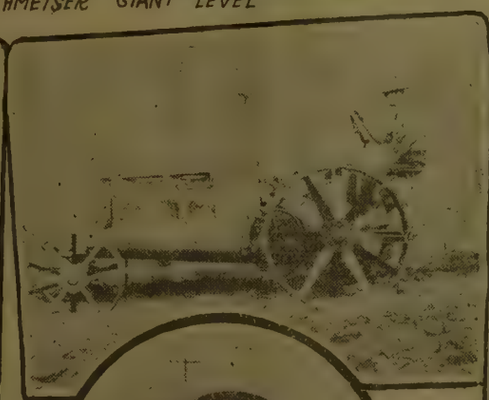
CLETRAC "TANK TYPE"

AVERY MOTOR CULTIVATOR

HOLT "CATERPILLAR" WITH SCHMEISER GIANT LEVEL

MOLINE "UNIVERSAL (CULTIVATING)

AN AVERY GIANT



WALLIS "CUB"

YUBA "BALL TREAD"

HEIDER FRICTION DRIVE

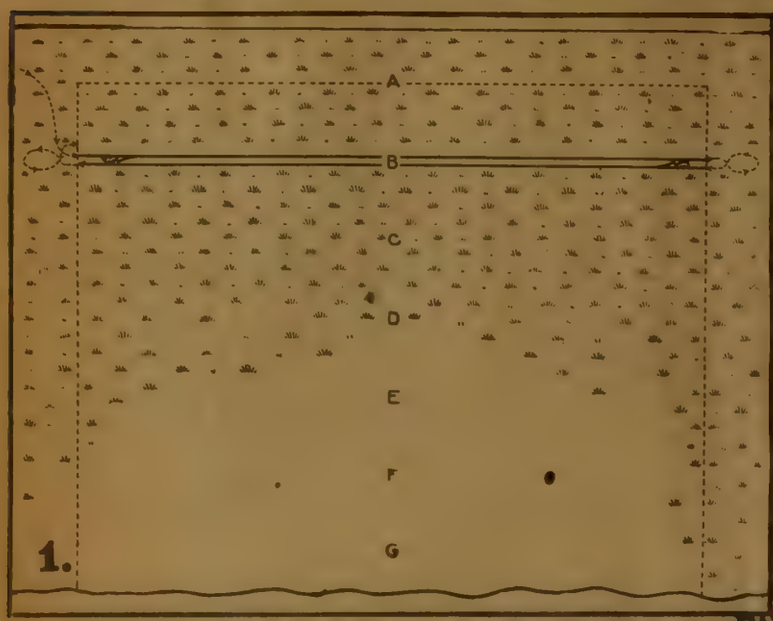
FAGEOL "WALKING" TRACTOR

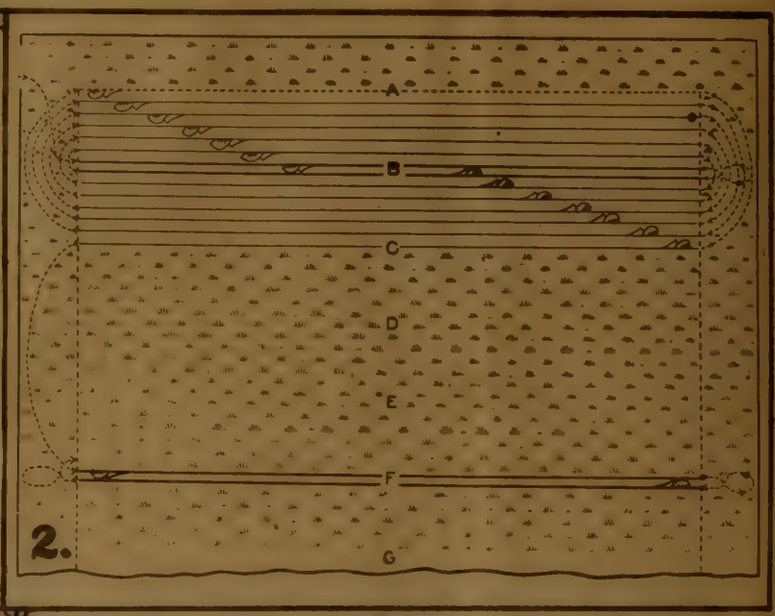
RODERICK-LEAN ENGINE DISC-HARROWS

C.L. BEST "TRACKLAYER"

Laying Out a Field for Tractor Plowing

How to Handle the Ordinary General-Purpose Machine With Two, Three or Four Bottoms





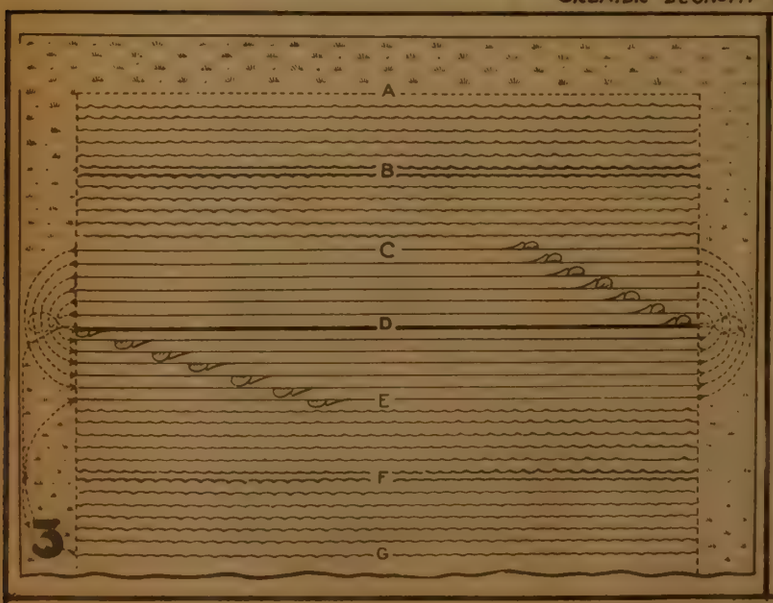
1. FIRST STAGE. MEASURE A HEAD-LAND AROUND THE FIELD AND BEGIN PLOWING THE FIRST LAND AT "B" WITH A BACK-FURROW.

2. SECOND STAGE. NEW BACK-FURROW IS LAID OUT AT "F" AFTER LAND IS COMPLETED AROUND BACK-FURROW AT "B"

3. THIRD STAGE. SAME FIELD, WITH LAND FROM "E" TO "G" COMPLETED AROUND BACK-FURROW "F" AND LAND FROM "C" TO "E" PLOWED AROUND, LEAVING A DEAD FURROW AT "D"

4. THE FINISH. THE JOB IS COMPLETED BY PLOWING AROUND FIELD. CORNERS ARE "CUT" ENOUGH TO INSURE EASY TURNS. FURROWS ARE THROWN TOWARDS PLOWED LANDS.

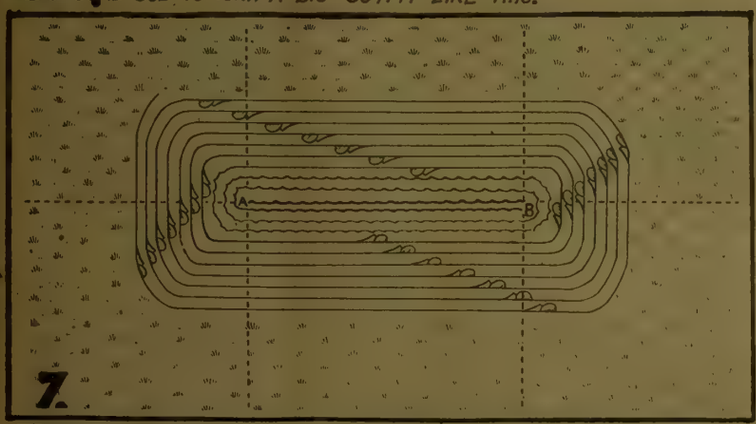
5. LONG, STRAIGHT FURROWS MAKE TRACTOR-PLOWING EASY. LESS TURNS MEAN LESS "RAGGED EDGES" AND GREATER ECONOMY OF OPERATION.



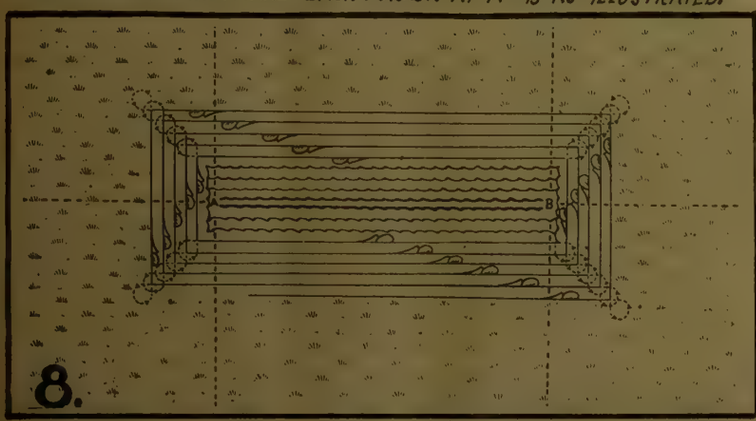
Managing a Big Outfit

Where Plows Are Left in the Ground

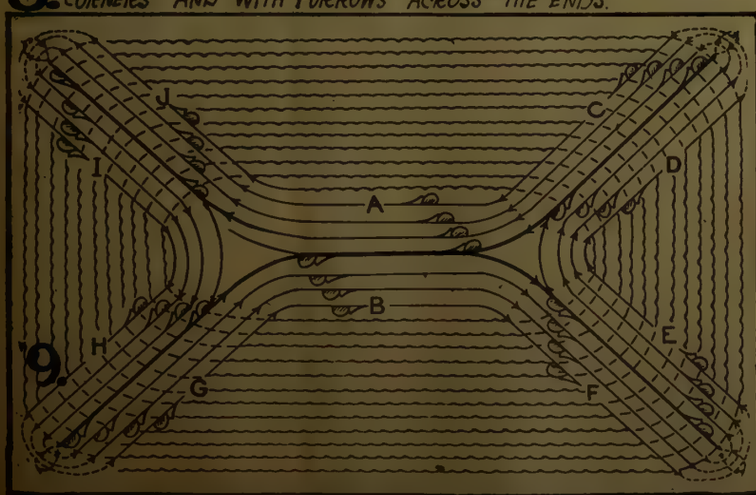
6. SOME JOB TO TURN A BIG OUTFIT LIKE THIS.



7. WHEN PLOWS ARE LEFT IN THE GROUND, MEASURE FIELD AS INDICATED BY DOTTED LINE. MAKE BACK-FURROW AT "A"-"B" AS ILLUSTRATED.



8. FIELD PLOWED AROUND A CENTRAL BACK-FURROW, "A-B" WITH SQUARE CORNERS AND WITH FURROWS ACROSS THE ENDS.



9. PLAN FOR FINISHING THE DEAD FURROW AND PLOWING THE DIAGONAL STRIPS WHICH ARE LEFT IMPERFECTLY PLOWED AT THE TURNING-POINTS. IN STARTING AT THE OUTSIDE AND PLOWING AROUND THE FIELD.

4th ANNUAL TRACTOR AND IMPLEMENT DEMONSTRATION

· 1919 ·

SEPTEMBER 16th. TO 21st. INCLUSIVE

MELROSE AVENUE and CRESCENT AVENUE LOS ANGELES

P.E. Cars from Hill Street Station direct to DEMONSTRATION GROUNDS via Sunset Boulevard

DEMONSTRATION CONTINUOUS DAILY

From 9 to 5 - Exhibits by leading tractor - implement - motor - automobile - oil - accessory and electrical distributors

NO ADMISSION CHARGES · FREE PARKING SPACE · GOOD MEALS ON GROUNDS

COME ALL! TRACTION ENGINE & IMPLEMENT DEALERS ASSN. OF SO. CAL

R.M. O'Neill - Mgr. 112 So. Los Angeles St., Los Angeles Main 655

REMEMBER THE DATES AND BE SURE TO BE THERE

HAWKEYE MOTOR TRUCKS

The truck shown below represents the 2-ton Hawkeye with all-around farm body.

We are selling many of these to farmers everywhere for all-purpose farm hauling.

Hawkeye Trucks are built to stand up under the rough and tumble conditions under which a truck on the farm must be operated. There is a big difference between driving a truck over the smooth paved streets of a city and driving it over the rough roads of the country and the bumps and hollows of the farm.

Quality Tested Units

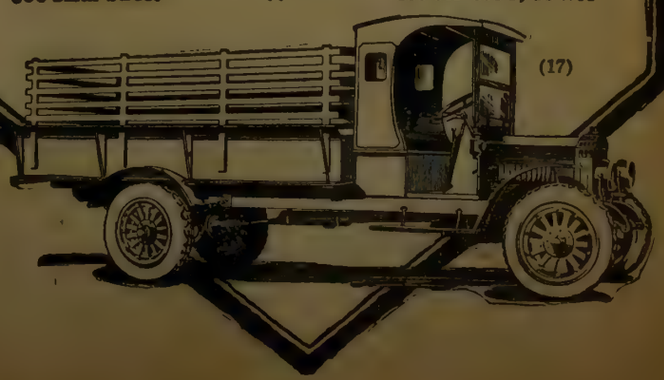
While the major units include such well known high grade products as Buda Motor, Clark Internal Gear Rear Axle and Fuller Transmission, we make over 170 parts that go into the Hawkeye and guarantee their reliability.

For getting live stock and crops to market, the Hawkeye is a mighty good investment. *Write for prices and full information.*

Hawkeye Truck Company

630 Sixth Street :: SIOUX CITY, IOWA

(17)



SAMSON

Sieve Grip Tractor

New Model 30-X

includes all the valuable features which made other Samson models so practical and popular for field and orchard work, and besides the new Model 30-X has a lot MORE POWER ON THE DRAW BAR.

We have a special proposition on this new model which will interest you and save you money. Write at once for full particulars and Circular O.

Samson Sales Co.

157 N. Los Angeles St.
Los Angeles, Cal.

Enter Your Show Stock

at the

Los Angeles Livestock Show

to be held at

Exposition Park Oct. 18-26

$55,000 Cash Premiums and Prizes

Special attractions consisting of harness and running races, driving and saddle horse show, Holstein sale and dairymen's exhibit.
Entries close September 20. Complete premium list ready.

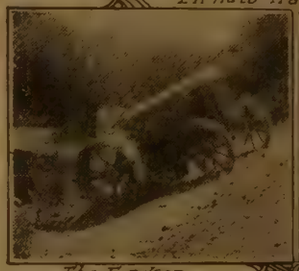
Address:

C. R. THOMAS, Sec.-Mgr.
Chamber of Commerce
Los Angeles, Cal.

They'll Show What They Can Do

A few of the entries in the great field exhibition of tractors and machinery to be held at Los Angeles Sept. 16 to 21. See them all in action and decide which one you want!

I A Auto-Tractor Co's "Little Bear"



The Fordson

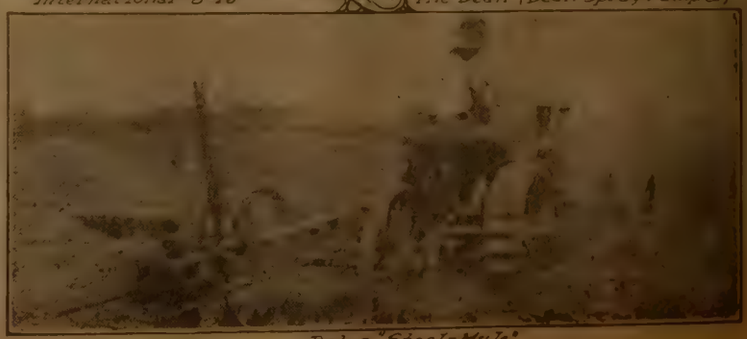
The Sandusky (Dauch Mfg Co

Special Fanquar California Bean Thresher

Union Tool Co's "Sure Grip"

International "8-16"

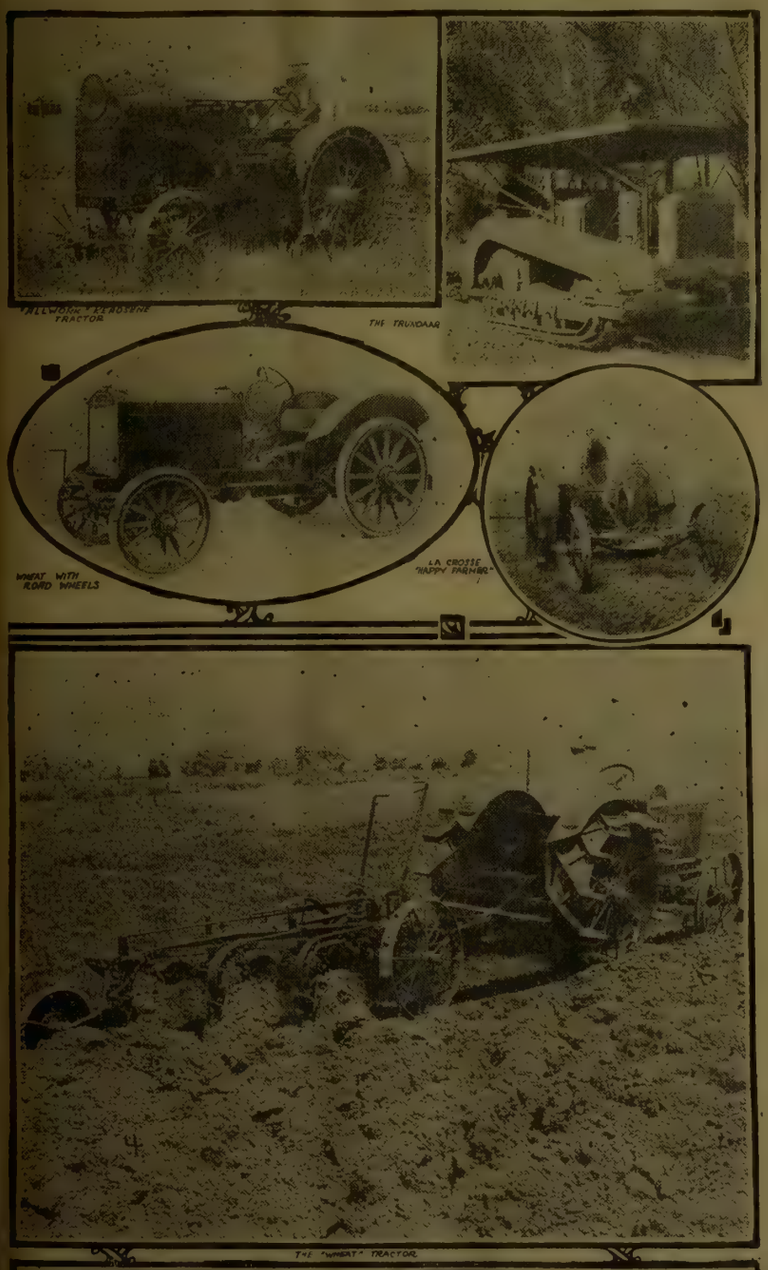
The Bean (Bean Spray Pump Co)



Bates "Steel-Mule"

At the Tractor Demonstration

Descriptions, names of dealers and complete information about each entry may be found elsewhere in this issue. Other entries illustrated on Page 7. Study the pictures!



The Allen 10-20

the most up to date and advanced, the most practical and the simplest two to three plow tractor built.

The performance on the farm during the year under all working conditions proves the correctness of the design, the quality of construction and material and the money value of this machine. It represents a specific case of not what you pay but what you get.

Built to be a paying investment for the buyer.

Rating

Draw Bar Horse Power, 10.
Belt Horse Power, 20.
Engine, S. A. E. Rating, 27.
Develops fully 20% more power.

Special Features

NO DIFFERENTIAL GEARS, both drive wheels solidly locked when pulling prevents slipping and makes an even pull possible. All Timken Roller Bearings, including front wheels, all gears cut, complete transmission including bull gears and bull pinions, absolutely dust proof. Without necessitating brake of any kind tractor turns on a seven-foot radius with ease.

For road work and other desirable cases add 800 lbs. of water to drive wheels, increase traction and take advantage of your engine power.

General

Over all length 9 feet 8 inches, over all width 4 feet 9 inches, and wheel base 6 feet.

See Us at Annual Demonstration

Melrose and Crescent Avenues, September 16th to 21st.

Write for Booklet

Community ManufacturingCo.

General Office 1230-32 Marsh-Strong Bldg.,
Los Angeles, Cal.
Factory, 400 South Raymond Ave.,
West Alhambra, California.
E. G. Judah, President.

Important to Dairymen and Stockmen

You will be interested in our demonstration plot of

MILLETS	GRASSES	SORGHUMS
Pearl Millet	Para	*Wonder Forage
*Broom Corn	*Napier	Japanese Sugar Cane
Hog Millet	Guinea	*Silver Tip Sorghum
Red Millet	Cocksfoot	Ribbon Cane
*Japanese Millet	*Fog	Honey Sorghum
Biloxi Soy Beans	Paspalum Dilatum	Shallu
Golden Millet	Billion Dollar Grass	Feterita
*Brown-top Millet	*Rhodes	White Milo
Chinese Millet	Natal	Egyptian Corn
Indian Millet	Bromus Enermis	*Schrock Kaffir Sorghum
White Wonder Millet	*Merker	Dwarf Milo
Large Headed Millet	Red Top	Sudan
	Perennial Rye	Kaoliangs
	Italian Rye	
	*Smilo Grass	
	Teff Grass	

The varieties marked * indicate superiority. Be sure to see them growing on the 1500 block, West Sixteenth street. Send at once for our bulletin describing each one.

AGGELER & MUSSER SEED CO.
620 South Spring St., Los Angeles, Cal.

THE ELLIOTT SCHOOL FOR GIRLS

RESIDENCE AND DAY SCHOOL
SUPERIOR EDUCATIONAL ADVANTAGES
IDEAL HOME LIFE CHARACTER BUILDING
MARTHA COLLINS WEAVER, M. A., PRINCIPAL
1303 So. Gramercy Place Telephone 72826 Los Angeles, Cal.

Wade Improved Pea and Bean Thresher

The luxuriant growth and tough vines of Western grown peas and beans require a stronger draft than has been possible heretofore. Improved and stronger construction of the WADE Blower results in a more powerful current. The larger-than-ordinary cleaning surface assures greater output, and our sacking attachment completes the machine.

WADE Controlled Air Currents

The air currents are not allowed to blow broadcast through the machine. They are controlled by our improved damper and concentrated through our own construction to do the work better and more efficiently.

Learn All About the WADE

The construction throughout will please you; it has that "stronger than necessary" appearance that means service. Post yourself on this wonderful machine; send at once for our booklet, fully illustrated, comparing the WADE features with the old style. Prices no higher than on ordinary machines. You be the judge. Write today.

R·M·WADE & CO.
SINCE 1865

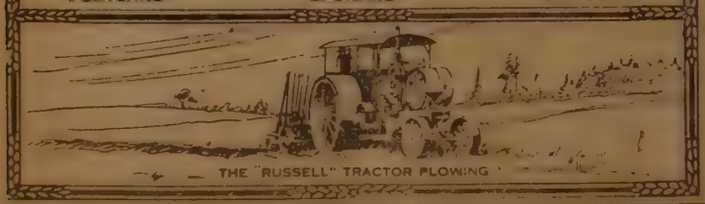
B. Hayman Co., 118-120 N. L. A. St.
LOS ANGELES.
Hawthorne Ave.,
PORTLAND, OREGON.
Oldest and Largest
Independent Implement Dealers
on the Pacific Coast.

THE PROGRESSIVE FARMER EVERYWHERE
NEEDS FOR HIS UP-TO-DATE RANCH
HIGH GRADE MACHINERY
MACHINERY WITH A REPUTATION FOR MAKING GOOD.
THERE IS NONE BETTER THAN
THE OLD RELIABLE RUSSELL LINE

BUILT SINCE 1842
LET US TELL YOU WHY IT IS THE BEST

RUSSELL TRACTORS	10 TO 30 HORSE POWER
RUSSELL THRESHERS	18 TO 40 INCH CYLINDER
RUSSELL SAW MILLS	ALL SIZES
RUSSELL ENGINES	8 HORSE POWER AND UP
RUSSELL BOILERS	8 TO 100 HORSE POWER

RUSSELL MACHINERY
COSTS LESS FOR REPAIRS BECAUSE IT IS BUILT AS SIMPLE AS POSSIBLE. ALL WORKING PARTS ARE ACCESSIBLE
WRITE FOR CATALOGUES
THE A. H. AVERILL MACHINERY COMPANY
PORTLAND SPOKANE SAN JOSE



THE "RUSSELL" TRACTOR PLOWING

Doctoring the Sick Tractor

What to Do and How to Do It

By W. W. Rainey

GOOD care of the tractor is simply business insurance. If you had $1500 to invest at 6 per cent interest, and I could show you where you could invest it, at no greater risk, to make 8 per cent, I am sure you would hasten to accept my proposition. The percentage returned on an investment in a tractor is governed largely by the care that it receives. It is my purpose to show how you can make your tractor earn more money.

Make all your repairs and adjustments promptly. All machinery, even with the best of care, will wear in certain places, and furthermore, all machinery is subject to breakage, due to accidents and flaws. Whenever any part of your tractor is found to be cracked or broken, renew it immediately, for if neglected it may result in the breakage of another part which depends upon it for strength or bearing surface.

Whenever a bearing or any part of the motor becomes loose, then is the time to make the adjustment. It is the best practice to go over your tractor thoroughly after the completion of each season's work, and take apart such pieces as seem to be worn in order to examine them closely. Tighten up all bearings, clean out carbon, grind in the valves, and know that your clutch lining is good for another season; also replace any badly worn gears.

Ordinarily, the valves will need "grinding in" once a season, but, as suggested in a previous article, do not hesitate to grind them in oftener if you find that one of them is not seating. If your tractor has a small, high-speed motor, the connecting rod bearings should be examined and tightened up about every 100 or 120 hours of hard work. If you are using a heavy-duty, slow-speed motor, it will not be necessary to give them so much attention, but they should be examined once every three or four weeks by removing the crankcase plate, by which means you can then take them up whenever needed.

In case you get into difficulty with your tractor, and do not know instantly what is wrong, sit down on the footboard and recall that old railroad sign that says, "Stop, Look, Listen!" then add to this warning the word "think."

Causes of "Disease"

The operation of the internal combustion engine depends entirely upon three things—compression, fuel and a good hot spark from the magneto. If your motor has good compression, is primed properly by use of the proper amount of gasoline in the priming cup placed on the cylinders for that purpose; if the fuel valve is opened and your carburetor full of "gas"; if the impulse starter is properly connected so that it will "flip" the magneto armature at the firing point, your motor should start with no difficulty. If it does not, remember that continual cranking is only a needless waste of energy, usually accompanied by loss of religion, and does no good. Then is the time to "Stop, Look, Listen!" (and think) to see if you cannot locate which one of the above three conditions is not right. Be systematic about it.

Vigilance!

Most human ills are due to negligence and disregard of Nature's laws. So it is with the tractor. Remember that, just as you and nobody else, must be held responsible for the care of your health, so the responsibility for the care of your tractor rests with you.

Even though you employ a physical culture teacher to assist you in building up a strong constitution, his interest ceases with collection of his fee, and it is up to you to continue your exercise and care. Similarly, if you employ an experienced driver to run and care for your tractor his interest is only that of an employe, and he has none of the repair bills to pay!

The physician is mainly concerned with patching up broken-down constitutions. Similarly, the mechanic who is called in to overhaul a tractor, is concerned with cure, not prevention. Prevention is up to you!

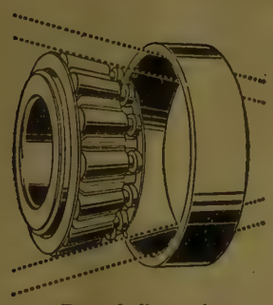
In this article "Doctor" Rainey gives some very useful pointers on "prevention of disease" and shows how to avoid the expense of consulting a "specialist."—The Editor.

You have just been cranking the motor, and you know whether or not the compression is good. If not, there may be a valve sticking open, or the valve push-rod (or tappet) may be too long, or some foreign particle may have lodged under the valve. If the compression is good, try for a spark. First take out the spark plug and see if it is clean. If it looks dirty inside, never waste your time by scraping the ends of the points clean but take the plug apart and scrape it until it is all thoroughly cleaned of carbon deposits. Clean in this way both the inside of the body of the plug and the insulation on the electrode, or center member of the plug. Wash it with gasoline and dry it thoroughly before putting it together again. Then see that the points are set not more than 1-32d of an inch apart, nor less than 1-64th of an inch. If it is set any wider than 1-32d of an inch, the voltage required to cause the current to jump across the gap will be so great that there is danger of breaking down the insulation at some other point in the circuit, with resulting escape of the "juice" before it performs its duty at the spark gap. If the gap is made less, the spark formed at the plug points will be so short that the amount of heat generated will not be sufficient to cause proper ignition of the compressed gasses.

After you have cleaned the plug properly, attach the wire from the magneto and then, holding the lower

(Continued on Page 66)

TIMKEN TAPER



Dotted lines show how the inside of the "cup" of a Timken Bearing is *tapered* to fit over the *tapered* rollers.

Two Ways Out

When heavy trucking churns up the mud and cuts ruts deeper and deeper—

When mile after mile of sand holds back the wheels—

When rain-cut hilly roads and washed-out culverts call for careful driving—

For such ills as these, there is only one cure.

That's the remedy that begins with plow and scraper and ends with a hard-surface, well drained highway. Therefore, get back of the Good Roads movement and push it for all you are worth.

But there's a preventive against bad road DELAY that is written in the specifications of the trucks, and reads: "Reliability," one of the essentials of which is the selection of bearings that are capable of out-lasting the truck on which they serve.

Many builders have found the remedy in Timken Tapered Bearings, to which there is practically no "wear-out" except by abuse or accident. After a Timken Bearing has been slightly loosened by thousands of miles of wear, a part turn of the adjusting nut or removal of a shim puts all parts back just as when new.

As for Timken Taper—it always stays the same, ready to take end thrust and downward load—to keep gears up to their work—to stand guard over transmission and differential gears—ready to resist the constant heavy push of worm or pinion—ready to add at every point to truck life as well as efficiency.

There's more about these bearings in the booklet, "How Can I Tell." A copy will be sent to you on request.

THE TIMKEN ROLLER BEARING CO.
Canton, Ohio

CHEAP OIL OR GOOD OIL?

Many ranchers have learned that it does not pay to buy oil just because it's cheap.

Pennzoil Tractor oil may cost a little more at first, but it goes farther. Keep your motor more free from repair bills and delays and it will prove cheaper in the long run.

"If your dealer will not supply you, order direct from us."

Panama Lubricants Co.

2624 SANTA FE AVE.

Los Angeles

PENNZOIL

Rheumatism

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered as only those who have it know for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number, who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

GOING TO BUILD?

Send for our Price List of Lumber, Sash, Doors and Builder's Supplies. We save you middleman's profit.

Contractors' & Builders' Supply Co., 1401 5th St. Oakland, Cal.

FOR SALE—I have 50 of the most handsome Toggenburg goats in Southern California, [illegible] registered [illegible] of 4 to 6 quart [illegible] now ready for their [illegible] Postage for

Introducing Our New Horticultural Editor

TO THOUSANDS of members of the big Orchard and Farm family, George P. Weldon needs no introduction. During his six years of untiring public service as Chief Deputy of the State Horticultural Commission, he has won the respect and confidence of the farmers and fruit growers from Siskiyou to Imperial and from the Coast to the High Sierras. Now, upon taking up new duties, following the absorption of the Horticultural Commission by the State Department of Agriculture, he leaves behind him a record equalled by few public officials.

Mr. Weldon's preparation for his chosen life-work was very thorough. Born and raised on a Colorado farm, he completed his education in that State, graduating with the degrees of B. S. and M. S. from the Colorado Agricultural College. Apparently he had little thought at that time of eventually making his home on the Pacific Coast, for the State of Maryland next claimed him. From 1906 to 1908 he served as Assistant State Entomologist of the Maryland Agricultural College and Experiment Station.

Unable, however, longer to resist the call of his own West, he returned to Colorado in 1908, and until 1911 served as Chief of Field Investigations at Grand Junction, under the jurisdiction of the Colorado State Agricultural College. Promoted in 1911, he became Deputy State Entomologist of Colorado and Assistant in the Department of Zoology and Entomology of the Colorado Agricultural College.

It was in 1913 that Mr. Weldon came to California to live and took up his work as Chief Deputy of the State Horticultural Commission. For a period of eight months (during the illness of the late A. J. Cook) he was Acting State Commissioner of Horticulture.

Mr. Weldon's contributions to agricultural literature include special bulletins on peach insects, the San Jose scale, apple tree leaf-roller, and red-spider. While with the California Horticultural Commission he served as Associate Editor of the Monthly Bulletin for five years and edited the Bulletin for one year. He also wrote special bulletins on "Pear Growing in California" and "Apple Growing in California."

Our new Horticultural Editor is widely known in national and international pomological and entomological circles, being a member of both the American Association of Economic Entomologists and the American Pomological Society.

Mr. Weldon enters this fall upon important duties at the Chaffey Junior College of Agriculture, Ontario, California, where he will serve as Pomologist and Field Expert in Deciduous Fruits. He will contribute each month to Orchard and Farm, on subjects of the most timely interest, and his articles will be replete with the kind of information that our readers "can put right to work in their business."

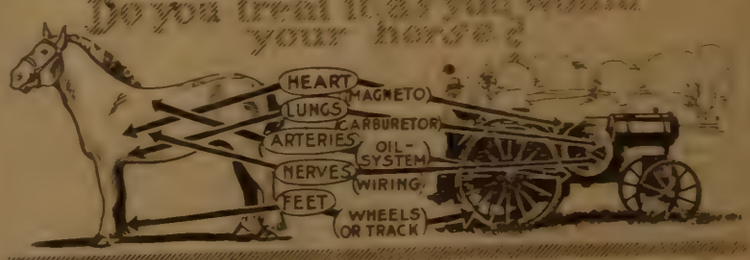
Watch for his first contributions in our October number, and feel free to write him for advice or information.

THROUGH NO OTHER FARM PAPER WILL YOU BE ABLE TO SECURE THE BENEFIT OF MR. WELDON'S EXPERIENCE AND ADVICE, FOR HE WILL WRITE EXCLUSIVELY FOR ORCHARD AND FARM.

In order that you may not miss a single one of Mr. Weldon's helpful articles, be sure that your subscription does not expire. This is but one of the big features that will make Orchard and Farm indispensable to you during the coming year. We are determined to give Orchard and Farm subscribers the best at any cost. Therefore, friends, "shake hands with our Mr. Weldon!"

Your Tractor is Alive!

Do you treat it as you would your horse?



ALIVE? YES! ALIVE WITH POWER!

And as susceptible to care or neglect as your favorite work-animal. Your horse has a comfortable stall in a carefully-planned stable. Does your tractor have a good garage or a corner of the implement shed that it can call its own? Your horse is fed only clean, bright hay; you would not give him musty straw! Do you strain the fuel into the tractor tank?

Your horse eats when he's idle, kicks when he's angry, balks when the load becomes heavy; tires before sundown. Your tractor, on the other hand, eats only when it works; obeys your commands without question; balks only when neglected or mistreated, and will work all night if necessary. Now, is it not worthy of as good treatment as you give your horse? Try it—and see which lives the longer!

BEEMAN

It Plows, Harrows, Cultivates, Runs any 4 H.P. Stationary Machinery

The Inexpensive Tractor for Small Ranches

Special California Type

Now Ready for Delivery

20% Increased Power

50% Greater Traction

Dust Proof Bull Guards

and other improvements.

SEE IT ON OUR FLOOR or ask for demonstration.

Distributors

Motors Equipment & Tractor Co.

1310 South Grand Ave., Los Angeles, Cal.

H. V. Carter Motor Co.

730 Van Ness Ave., San Francisco.

Agricultural Implements of All Kinds.

Goats For Sale

FROM

Catalina Island

It is our intention to dispose of all the goats now running on Catalina Island.

They have become quite well known in California as being an especially desirable goat for crossing with pure-bred milk goats, and their offspring is very desirable. We have several thousand nannies for sale, ranging in age from six months up. Would prefer selling in quantities of 100 or more and will arrange with responsible parties for reasonable cash payment and notes for the stock for the balance. For further particulars address

J. E. MAURER,

912 Citizens National Bank Bldg., Los Angeles, California

THE SELF-OILING WINDMILL

has become so popular in its first four years that thousands have been called for to replace, on their old towers, other makes of mills, and to replace, at small cost, the gearing of the earlier Aermotors, making them self-oiling. Its enclosed motor keeps in the oil and keeps out dust and rain. The Splash Oiling System constantly floods every bearing with oil, preventing wear and enabling the mill to pump in the lightest breeze. The oil supply is renewed once a year. Double Gears are used, each carrying half the load.

We make Gasoline Engines, Pumps, Tanks, Water Supply Goods and Steel Frame Saws.

Write AERMOTOR CO., 2500 Twelfth St., Chicago

Tractor Show

(Continued From Page 3)

exhibit Fordson tractors, with a special line of Roderick-Lean harrows; also Amsco drills.

F. T. Briles Company will exhibit the Bates Steel Mule 15-20 tractor, Bernice chisel and subsoiler, Schmeiser land levels and F. T. B. disc harrows.

Wm. Gregory & Sons have listed the Trundaar tractor.

The Motors Equipment and Tractor Company will display and demonstrate the Beeman Garden Tractor, with a complete line of implements for same. This company has made an unusual success of their first year's business. They have found that their miniature garden machine, designed to replace one horse, fills a long-felt want among the "little farms" of California.

The Killifer Manufacturing Company will show their standard subsoiler, tractor-chisels, orchard and field cultivators, automatic disc and for the first time at any demonstration their automatic subsoiler.

The Samson Sales Company will have on exhibition the Samson Sieve-Grip Model S. 25 and their new model 30X (its first appearance on the demonstration field). This model is equipped with Remy system of ignition and lights, Willard storage battery and elctrically controlled governor.

C. L. Best Gas Traction Company will show for the first time their new 60 H. P. tracklayer; also their small 25 H. P. machine. The "Best" is the product of a California factory, of which all Californians may well feel proud.

The Holt Manufacturing Company will have their usual exhibit of the 40-75 H. P. and 22-45 H. P., with their full line of plows and land levels. The Holt business is only just settling down to a peace basis after several years of work on war and Government contracts.

The Avery Company will show the following: 40-80 H. P., 18-36 H. P., 14-28 H. P., 8-16 six-cylinder (new model); six-cylinder new model, 5-10 H. P. new model cultivator and the Avery separator. This will be one of the largest tractor exhibits at the show.

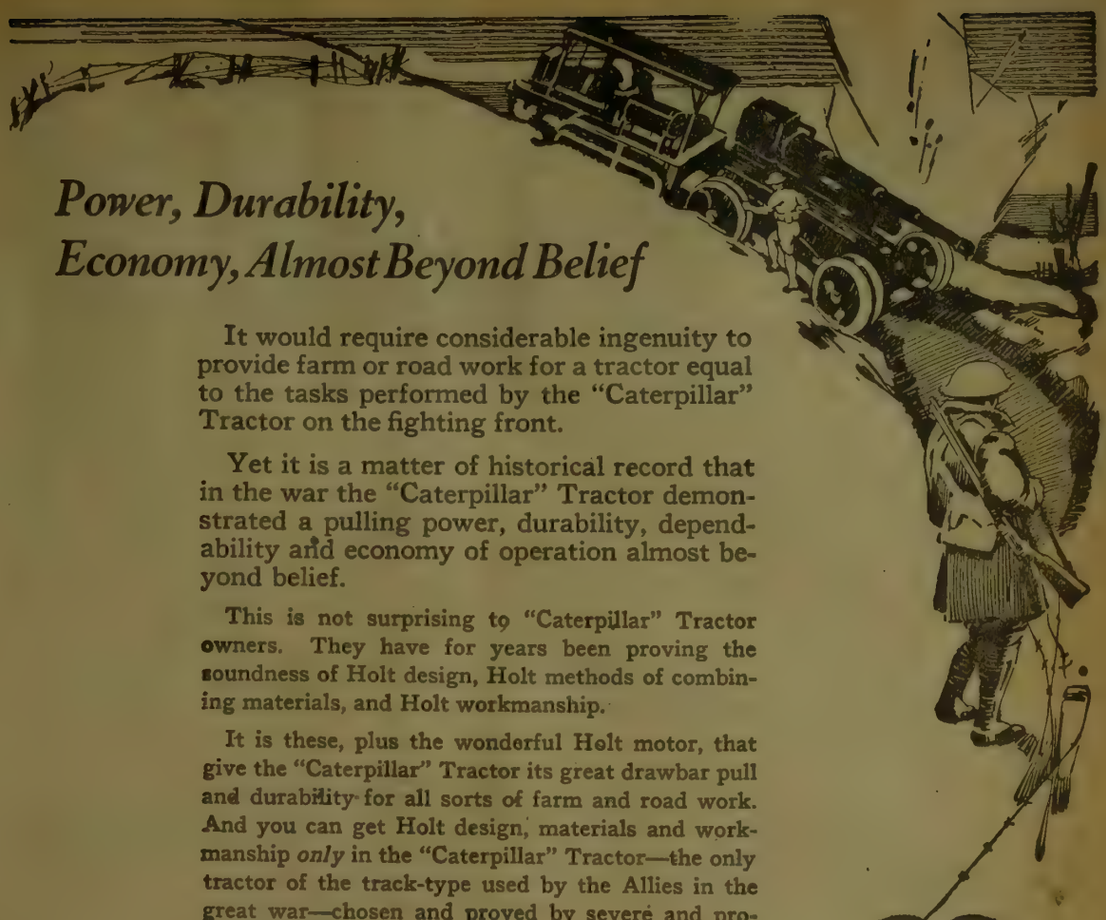
The "Little Bear" tractor, product of the L. A. Auto-Tractor Company, again will be shown, the new model carrying several improvements. This interesting and successful little machine is rebuilt from a Ford chassis.

Big Machinery Exhibits

Among the most complete machinery exhibits will be that of Arnott & Co., whose display will include the following well known lines: Sanders orchard and field disc plaws, Superior drills, Iron Age cultivators, planters, garden tools and sprayers, Climax feed cutters, Imperial peg, spring and disc harrows, Arnott improved type orchard double disc harrow, Walter A. Wood harvesting machinery, Auto-Fedan hay presses, Ann Arbor hay presses, Arnott orchard riding cultivators, Buckeye riding cultivators, Imperial mouldboard plows, Farquhar bean and grain threshers, Bauer Bros. grinding mills and Pekin wagons. Many of the implements and pieces of machinery will be shown in action.

Douglas Boswell, Pacific Coast distributor for the Wallis "Cub" tractor, will also display a line of J. I. Case plows. The Wallis is one of the best

(Continued on Page 34)



Power, Durability, Economy, Almost Beyond Belief

It would require considerable ingenuity to provide farm or road work for a tractor equal to the tasks performed by the "Caterpillar" Tractor on the fighting front.

Yet it is a matter of historical record that in the war the "Caterpillar" Tractor demonstrated a pulling power, durability, dependability and economy of operation almost beyond belief.

This is not surprising to "Caterpillar" Tractor owners. They have for years been proving the soundness of Holt design, Holt methods of combining materials, and Holt workmanship.

It is these, plus the wonderful Holt motor, that give the "Caterpillar" Tractor its great drawbar pull and durability for all sorts of farm and road work. And you can get Holt design, materials and workmanship *only* in the "Caterpillar" Tractor—the only tractor of the track-type used by the Allies in the great war—chosen and proved by severe and prolonged tests.

Get your "Caterpillar" Tractor now. Send for Catalog 403.

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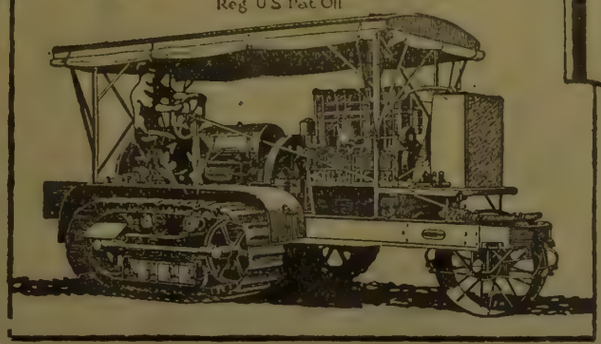

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EDITORIAL DEPARTMENT

Cheerful Chat Among Farm Folk

ORCHARD AND FARM is a magazine of, by and for agricultural people; standing by the food producer in all things: looking at life from his point of view. We recognize the proud position held by you who make your living from the soil. Your interests are our interests; your problems our problems; your struggles, ours.

To publish only that which is clean, helpful, interesting; to make the pages of this magazine a clearing house for useful ideas; to assist and entertain every member of the family; to deserve and keep the good will and respect of its readers—that is the policy of Orchard and Farm.—J. C. KNOLLIN, Editor.

Every Farmer Interested

MOST wheat-raisers don't care about the price of berry-boxes and very few strawberry-growers worry over the cost of grain-sacks. The owner of the average orange grove does not spend his time investigating cucumber pests, while the cucumber specialist has other things to think about than citrus-canker.

But there is one subject in which EVERY agriculturist, no matter what his crop, and no matter what his acreage, is **vitally interested**—and that is the subject of Power Farming. There is a tractor to fit the fruit farm of five acres or the grain ranch of five thousand. And power farming is the greatest single development in this era of wonderful agricultural advancement.

If you do not own a tractor you should not wait another day to commence a thorough study of the subject. Perhaps an investment in a machine would not be advisable, for you; the mere fact that you are not an owner does not indicate narrow vision. However, the man is narrow who does not know whether a tractor would be a good investment for him and makes no effort to find out. Give the dealers and manufacturers a chance to present their arguments; attend their demonstrations. Learn all you can about tractors; attend the tractor schools or university short courses. Then apply what you have learned to your own situation. The chances are ten to one that you will be converted!

Will It Come?

WITH the discontinuance of the Federal Employment Agencies has flown, temporarily at least, a fond dream of certain students of agricultural economy. These visionary, but certainly not selfish, individuals have advocated the establishment of a system whereby groups of "harvest hands" might be moved in bodies from one section to another, under Government supervision, at half-fare. The benefits of such a system are too apparent to require more than the briefest mention.

The laborers would be spared the heavy expense of making long trips between short jobs from one harvest section to another at existing rates of fare. Furthermore, by moving under the direction of Federal offices in touch with the entire situation, they could concentrate their efforts upon jobs requiring a long stay in each locality and consequently could deliver better work at less cost. They could save more money. They could demand and receive better housing conditions.

The employers, on the other hand, could deal, collectively, with a Government bureau, instead of individually with individuals. They would be assured before the harvest of sufficient "extra help." They could afford to pay good wages to really efficient laborers. And, surely, the better element among farm laborers might be expected to take advantage of such an arrangement for the purpose of saving more money.

Perhaps some other means of working out this or a similar plan other than the co-operation of Government agencies will finally be evolved; in the meantime, neither worker nor employer is satisfied.

Uncle Wiseacre Talks on Prunes and Lawyers

THIS here country is havin' a orgy of organizin'. Th' city landlords organize t' boost their rents an' then th' renters organize t' boycott butter 'n eggs so th' organized farmers 'll have t' reduce food prices. But th' farmers is buyin' machinery f'm th' organized manufacturers an' sellin' their products to organized buyers, so I don't see where they're committin' no crime by keepin' up with th' times.

A feller'd think, though, thet th' food-producers' "combines" was reg'lar Bullsheveek societies, th' way th' consumers rants an' tears. Accordin' t' some reports ye might suppose th' farmers had sneaked out under cover o' night, and in secret docymints written in blood, had dedicated their bean fields an' citrus groves to th' upheaval o' mankind and th' destruction of th' balance of th' human race.

But it's a poor law, as any lawyer 'll agree, thet ain't got at least two angles. Th' lawyers thet makes th' laws sees t' that. It's a cinch they ain't goin t' jeopardize their own business, an' so I reckon th' more laws we has, th' more lawyers we'll have t' support. But that ain't neither here nor there. There's one law thet nobody kin gét around and that is thet people has to eat t' live. As long as two-thirds o' th' human race prefers t' make their livin'

by pushin' papers acrost desks they better be fosterin' instead o' fightin' th' business o' food-production.

But that ain't human nature, I reckon. So th' Boarding-house Victims' Mutual Protective Association organizes t' hold down their board-bills. Then th' Landladies' Guild, while raisin' th' price of meals, tries t' force th' prune-market downward. So finally th' prune-grower, who, it seems, everybody expects t' be th' real goat, jines up with his feller-producers into an association t' get a decent price fer th' lowly fruit thet is supposed t' pay his doctor and labor bills.

So there ye are! I guess if ye get right down to it, there ain't nobody better off onless it's th' managers of all these here city and country associations, who is mainly concerned with collectin' dues. But it's jest a case of one good jolt deservin' another, an' believe me, th' farmer ain't goin' to be th' one t' take th' final count! I said nobody much was benefited, but I plumb fergot about th' lawyers. Seems like they're sure t' get what little money a feller has left after payin' dues t' ninety-seven associations an' buyin' what he needs f'm a hundred an' sixty others. I reckon most any lawyer could explain, without leavin' any room fer doubt, this here prune and boarding-house mixup, but I have a suspicion thet th' nature of his argyment 'd depend on whether his client was producin' or consumin' th' prune!

Modern Dehydration

THE impression exists that dehydration was "put on the map" during the war by the increased production attendant upon heavy Government purchases. However, there are many persons in close touch with this old-new industry who contend that just the reverse is true.

They point out that the quality of much of the material furnished the army and navy was such as to give the industry a black eye for years to come. Mention dried vegetables to the average doughboy or gob and probably he will turn up his nose and say, "Garbage!"

It is unfortunate that this impression exists, for it is possible to dehydrate fruits and vegetables in such a manner that, when soaked in water, they will return almost to their original physical condition, containing all the flavor of the fresh article. "Dehydration" and "drying" are two different processes. "Dried" products are too often "burned"; that is, robbed of their ability to return to normal consistency, and consequently of their flavor and food value.

Dehydration, in its true meaning, has a great future in California, not only in the preparation of vegetables for the retail market, but also in the curing of fruits now dried in the sun. More and more fruit-growers, especially in the prune and peach districts, are installing, either individually or co-operatively, improved dehydrating plants capable of turning out from five to one hundred tons of dried product every twenty-four hours. Proper dehydration means a superior product. The evils of sun-drying, not to mention the possible losses in case of adverse weather, are too well known for further comment.

The two great lessons taught by the war (elimination of waste and increased production), if they are not to be forgotten, call for inclusion in our reconstruction and permanent programs, of the process of dehydration.

New Fair Idea

There was a time when State or county fairs consisted primarily of snake charmers, bearded ladies, educated apes, pink lemonade vendors and shell game experts.

A great and important change has come about in the past few years. The modern fair is, first of all, educational. Linked up with the progressive developments of an enlightened agricultural era, it has taken on a more serious and uplifting aspect.

A sign of the times is the "community fair." The farm bureaus, which have been instrumental in its development, are also making their influence felt upon the larger exhibitions throughout the country. Let us have wholesome amusements, to be sure! But here's to the worth-while fair!

New State Department

THE new State law combining certain commissions of the California Government into a Department of Agriculture became effective July 22. Gov. William D. Stephens immediately appointed G. H. Hecke of Woodland, who has been State Horticultural Commissioner, chief of the new department. Dr. J. P. Iverson, former State veterinarian, remains as chief of the Division of Animal Industry.

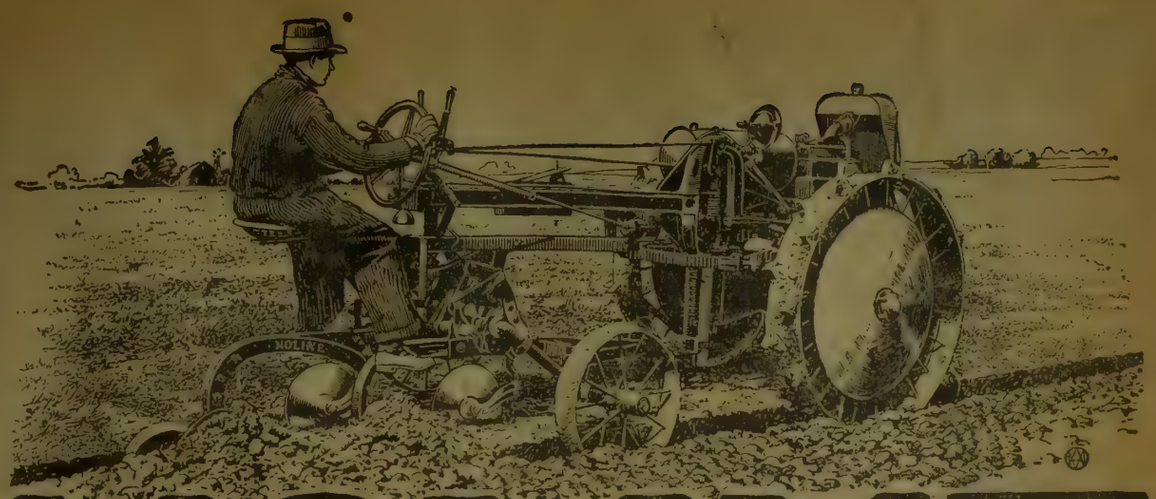
The Horticultural Commission since its inception in 1903, has carried on the work commenced forty years ago by such pioneers as Elwood Cooper, Matthew Cooke, Alexander Craw and B. B. DeLong. Among other accomplishments it has established quarantine of the maritime ports of entry, inaugurated the search for beneficial insects, brought about the standardization of fruits, undertaken the control of rodents and disseminated much useful information in the form of bulletins and news articles.

The fruit standardization laws have been remodeled, and now apply also to dried fruits, vegetables and nuts. Potato-seed certification also has been provided. The shipment of green, immature and inedible fruit will be further prevented. And not alone the consumers but likewise the growers, themselves, are protected by such regulations, for any improvement in quality of California products is of direct benefit to every California producer, even if enforcement of the law involves temporary loss for individuals.

Now the Horticultural Commission, as such, is dissolved, and its duties are to be absorbed in the broader activities of the new State Department of Agriculture. That California's great agricultural resources will continue to be fostered and guarded is unquestioned by those acquainted with Charles H. Hecke and his accomplishments.

The work of the Division of Animal Industry, under Dr. J. P. Iverson, will be continued and expanded. The duties of this department include eradication of ticks and sheep scabies. From July 1918 to June 1919 more than 1,500,000 sheep were inspected for scabies. Emergency work is performed in the control of anthrax. Glanders has been practically eliminated in this State by insistence that all infected animals be immediately destroyed, and by testing and examining contacts, destroying reactors, and requiring suitable disinfection. Outbreaks of hog cholera are checked by the use of serum and virus, while dairy cows are tested for tuberculosis.

With expansion and protection of the two great branches of agriculture thus provided for, California producers and consumers may feel that they have at Sacramento a mutual champion of their rights. Orchard and Farm believes that under Mr. Hecke's direction, our new Department of Agriculture will be built upon a firm and lasting foundation, and will be capable of expanding to meet such needs as may arise. "More power to you, Hecke!"



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HARVESTING CORN

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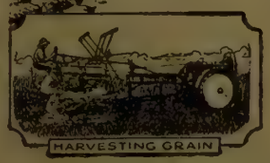
HARVESTING GRAIN

You buy a tractor to make money. The more money a tractor or implement will make for you the more you are willing to pay for it.

Consider then what a tractor will make for you in dollars and cents—how much man power it saves, how many horses it displaces, and the more and better work it will do. That is the way to buy a tractor—the purchase price alone should not influence you.

When you buy a Moline-Universal Tractor you get one of the finest power plants on wheels. You get a completely equipped tractor, with self starter, electric governor, electric lights, belt pulley, power lift gang plow—everything you need.

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Actual figures from over 200 farms in 37 states show that the Moline System of Power farming saves an average of 1⅓ men and 5 horses per farm.

Figure what such a saving will mean to you. Considered from this point of view the Moline-Universal is the lowest priced tractor made. Thousands of farmers are proving this every day. Write us today for full information. It's free on request.

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If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

The Great Task of Construction

With the coming of peace the Bell System faced an enormous construction program. Conditions arising from war resulted in the wiping out of the reserve equipment normally maintained, and necessary to give prompt connection to new subscribers. The release of industry and accumulated growth of population now makes telephone demands almost overwhelming.

Telephone construction, including buildings, switchboards, conduits, cables and toll lines, must, from its inherent nature, be undertaken in large units. A metropolitan switchboard, with its tens of thousands of parts, may require from two to three years to construct and install.

Only great extension can meet the present excess burden of traffic and provide for future requirements. Extension which cares for immediate demand, only, is uneconomical and calls for continuous work of such a character as to be frequently detrimental to the service.

During the war the Bell System devoted all its margin to the needs of the Government. The great task of getting back to normal prewar excellence of operation requires the reestablishment of an economic operating margin capable of taking care of a larger growth than has ever before confronted the Bell System.

Construction is being pushed to the limit of men and materials; while every effort is being made to provide the best, present service.

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For the Price of One

THE WHEAT TRACTOR.
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The WHEAT TRACTOR handles three 14-inch plow bottoms under all normal conditions. It will furnish power for any hay baler or silo filler, also plenty of power for a medium sized grain separator, with weigher, wind stacker and self feeder. As it is equipped with a governor like a stationary engine, the WHEAT TRACTOR will furnish steady power for pumping water, running an ensilage cutter or doing any similar farm work.

With the WHEAT TRACTOR'S interchangeable road wheel attachment it can be converted in less than an hour into a road truck with rubber tired wheels and will do anything that a 3500-pound truck will do with trailers. Some good territory still open for dealers.

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Spray Chart for Fall Months

This chart gives methods of controlling the more common fruit and vegetable pests prevalent during September and October. Formulas referred to are listed below. Consult your Horticultural Commissioner or Farm Adviser in cases of severe orchard or field infestation or infection. This may assist in preventing the spread of serious disease or pests, and should be regarded as a public duty.

By Charles L. Schufeldt

Disease or Insect	Plant or Tree and Remedy	Time to Treat—Directions
Scale (black red, yellow, purple, citrola).	Citrus trees (orange, lemon, pomelo) Fumigate with sodium cyanide, Wogium schedule A, 75 or 85 per cent. Formula No. 1 or set liquid gas	Treat for black scale between Sept 1 and Feb. 15. Treat other scale now. Fumigation best for large trees always. Trees two years old or under may be sprayed with Formula Nos. 2 or 4
Mealy Bug (collect in white meal like bunches, many kinds citrus worst).	Citrus trees; also many garden plants; leaf, stem, fruit and root. Difficult to control. Formula No. 1 or Nos. 2, 3 and 4 give some relief. Soak No. 3 or 4 into soil about roots	This pest has many natural enemies, light it from first appearance. Wash off with high pressure water. If in large numbers call in a specialist. May apply "tanglefoot" to the trees and keep it fresh. Keep down ants—they bring ants and seed to fight this pest.
Red Spider (on trees and cotton and beans).	Citrus, almond, peach, prune, walnut. Dry sulphur or lime sulphur, 1 part to 50 parts water	Repeat treatment every ten days as long as any mites hatch. Knapsack form of dust sprayers is good
Woolly Aphis (hairy plant lice).	Pears, apples, quinces and loquats. Formula No. 3. Wood ashes about roots helps some if aphids are on roots	Apply tobacco dust to branches and trunk and soak into soil about roots. Tobacco dust, stems and leaves about roots and soak into soil with water for root aphis.
Ants in Trees (where they are after honey dew of scale insects. Ants protect these insects).	Citrus and other fruits. Make formula No 3. Place an ounce of syrup in paraffin bag and nail to tree near base.	Make ready 24 hrs. in advance. Fold top of bag over to protect contents of sack and cut holes in sack for ants to enter or use tin can with cover partly cut out.
Nematode (eel worm — causes knots, large and small, and wart-like growth on roots. Worm very small; not visible to naked eye).	Beets, tomatoes, potatoes, carrots, all root crops; nursery trees. Once established in sandy irrigated soil become serious pest, difficult to eradicate.	Plow and harrow dry. Plant grain or grass not attacked. Alfalfa may follow beets. Worms live for years in soil if it is irrigated and cultivated. In green house soil may be disinfected with 1 part formaldehyde to 100 parts water.
Corn Ear Worm (varies in color. Usually small green worm about one inch long).	Corn ears, tomato fruit, cotton bolls, bean pods, walnuts, etc. A bad actor. Gets inside to eat out of reach of poison. Hand pick on tomatoes.	Spraying with arsenate of lead helps in case of beans or other plants of which the worm must eat the surface before getting inside. Treat as early as possible.
Cut Worms (smooth, light brown).	Garden plants, field beans, etc. Formula No. 7.	They eat at night. Hunt with a light. Use the bait. Get the first worm.
Grasshoppers.	Alfalfa, etc. Formula No. 7, dry mixed.	Sow poisoned bran in early morning. In large invasions use hopper-dozer (machine).
Green Worm (on cabbage, cauliflower, kohl rabi, etc.).	Formula No. 6, or powdered hellebore, non-poisonous, when heads are formed. Wash vegetables well before cooking.	Watch for white butterflies and spray at once; worms will soon hatch. Destroying butterflies will help.
Squash Bug (brown, stinking).	Squashes, cucumber, melon, pumpkin. They will cling under small leaves or shingles placed close to plants at night. Brush into coal oil night and morning.	Hand-pick old bugs. Smash clusters of brown eggs. Spray young with No 3, adding 1 ounce "Black Leaf 40" to 6 gallons or 1 teaspoonful to 1 gallon of soapy solution.
Tomato Worms (large, greenish).	On tomatoes. Hand pick. If many, use formula No. 6.	Destroy all the large, reddish-brown chrysalides or pupa found in soil. Catch large gray moth with light at night.
Slugs and Snails (with and without shell).	On many vegetables and flowers, especially small plants. Wood ashes and lime when fresh help some. Formula No. 7.	Common in summer. Hand-pick. Seek in dark, damp places, under walks, fences, boards, porches, etc. In large numbers, destroy with hand-torch
Tuber Moth (potatoes).	Protect potatoes from moth at night. All moths lay eggs at night. Cultivate thoroughly; hill vines; harvest early.	When crop is nearly ripe, moths lay eggs in tubers after dug, or if not deeply covered, or if in cracks in soil.
Wire Worms (about 1¼ inches long, yellowish, jointed). Adults are black click beetles.	Potatoes, corn, beets, etc. Rotate crops, planting some crop not damaged. Leave no trash in which adults can spend winter months.	Plow and harrow in fall to kill pupae. Trap the beetles under piles of straw, etc., and burn in late fall.
Flea Beetles (small dark beetles that jump or drop on being disturbed).	Potatoes, etc. Use a 5-5-50 Bordeaux mixture. Mix as directed or purchase ready for use. May add arsenate of lead.	Spray with 4-4-40 or 5-5-50 Bordeaux as a repellant. Best to add poison, 2 pounds arsenate lead paste to 50 gallons.
Gum Disease.	Citrus trees, Bordeaux paste. Purchase commercial paste or use formula No. 9.	Remove all dead bark to fresh wood and bark not diseased. Paint thoroughly with Bordeaux paste consistency of cream.
Pear Blight (on leaves, bark and branches).	Most pears. Cut out all affected parts well into healthy bark and wood. Keep cut out.	Dip the cutting tools after each operation in corrosive sublimate, 1 part to 1000 parts of water. Plant trees on resistant stock.
Rust (anthracnose; orange rust).	Berry bushes, rose, etc. Bordeaux mixture, summer strength, directions on package.	Pick off and burn all rusted or diseased leaves and spray young growth with Bordeaux repeatedly.
Rust (on asparagus and beans).	Purchase Bordeaux mixture, summer strength; 5-5-50; dilute as directed. Or spray with dry sulphur or 1 part lime sulphur to 30 parts of water before noon of warm day.	The treatment for red spider is good for rust. Rust and mites often go together. Treat for rust at very first appearance. Cannot be stopped once fully started.
Mildew. (Commercial lime sulphur is convenient. Use as directed and repeat if needed.)	Roses, beans, peas, dahlias, grape. Dry sulphur with powder spray, or liquid spray 1 lime sulphur to 3 water.	Apply dry sulphur when dew is on in morning of warm day. Apply spray or dry sulphur evenly on first appearance of mildew.
Scab and Rhizoctonia (on potato seed pieces.)	Soak seed in wooden vessel 1½ hours in 1 oz. corrosive sublimate to 8 gal. water. Or soak 2 hours in formaldehyde, 1 pound to 30 gals water.	Sow seed, discarding scabby ones or any showing decided brown streaks or rings when stem end is sliced off. Never plant seed in which disease is developed.
Blight (on potatoes, followed by rot of tubers).	Potatoes. Spray with commercial Bordeaux, 1 part to 75 to 100 parts water before disease appears. Repeat. Prevention better than cure.	One can make his own Bordeaux or bluestone solution, but the commercial solutions on the market are good.

FORMULAS USED IN SPRAY CHART

FORMULA NO. 1.—Fumigation. Multiply distance over tented tree by distance around; "point off" last two figures. Three fourths this amount is number of ounces sodium cyanide required. For each ounce cyanide use 1½ ounces sulphuric acid in two ounces water. Place latter in deep dish under tent; drop in cyanide close quickly, leave one hour. Do not breathe gas. Use now for mealy bugs or young scale not cleaned up before, best about September when young scale are out.

FORMULA NO. 2.—Ordinary household washing powder, 8 oz.; 45 ounces whitefish (as used in autos), 1 cup; water, 2 gals. Boil resinous and one quart water. Remove from fire and stir in dissolve thoroughly while hot, until well mixed. Add water to make two gallons.

FORMULA NO. 3.—Distillate (about 30 degrees Baume); 1 gal.; soap "whale oil is best"; 1 1-2 pounds, water to make 20 gallons. Dissolve soap in a convenient amount of boiling water, set away from fire and at once stir in the distillate, then add the balance of the water.

FORMULA NO. 4.—Make same as No. 3 and add "Black Leaf 40," 1 oz. to 7 gallons or 1 teaspoonful to one gallon.

FORMULA NO. 5.—For aphis in home garden. One heaping tablespoonful of soap powder, dissolved in one gallon warm water, with teaspoonful of "Black Leaf 40" added. For aphids on walnuts and other trees use fine tobacco dust with 50 per cent kaolin or hydrate lime as a diluent. Apply with blower or powder gun.

FORMULA NO. 6.—Arsenate of lead paste, 6 pounds (or half as much powdered arsenate of lead); wheat flour (stirred into water), 4 pounds; water, 100 gallons. Use one ounce of the paste or 1 2 ounce of powder and 1 ounce of flour to one gallon of water for small garden. This spray must be well agitated while using.

FORMULA NO. 7.—Poison bait. Wheat bran, 5 pounds; white arsenic 4 oz. (or Paris green, 4 oz.). Mix well; then add one lemon, chopped fine. Moisten slightly with molasses and little water to make adhere. Make a slightly moist, crumbly mash which will broadcast easily. Note—If birds, chickens or pets are able to get the poison great care must be exercised. For "sow-bugs," place the bait on a moist place under straw or litter.

FORMULA NO. 8.—The Government Argentina-ant syrup is made as follows: Granulated sugar, 15 pounds; water, 7 pints; tartaric acid, crystallized, 1-4 ounce. Boil for 30 minutes and allow to cool. Dissolve 3-4 ounce sodium arsenate (chemically pure), in 1 pint hot water. Cool. Add poison solution to syrup and stir well. Add to the poisoned syrup 1 1-2 pounds honey. Mix thoroughly.

FORMULA NO. 9.—One pound of blue stone dissolved in 1 gallon of water in a wooden or earthen vessel by hanging it in the top of a sack. Two pounds of unslaked lime, slaked in about one-half gallon of water. Stir together when cool, making a mixture about the consistency of whitewash. Apply with a brush.

NOTE—After last crop is harvested in field or garden see that all trash which might harbor insects wintering over is cleaned up and burned. Also prevent rusts and blight from wintering over on trash.

Lime in the Garden

THE quickest and cheapest known agency for renovating the garden soil and increasing its productivity is lime.

Prices of most commercial fertilizers at present are high. Only by most scrupulous conservation of stable manure and an increased use of legumes as green manure and of acid phosphate or of ground rock phosphate in composting manure, can the commercial fertilizer shortage be met.

There remains one thing, however, that may be done to increase yields that costs no more now than it did before. It may safely be asserted that if all sources of artificial chemical fertilizers failed our total output of food from the soil could not only be maintained but even increased for many years simply by the application of lime to land that now is low in yield or lying unused. Lime is not in itself an important fertilizing agent, but it does have the power of "unlocking" plant-food.

Probably lime would do more toward increasing the fertility of the average kitchen garden than would much more expensive commercial fertilizer. Constant cropping of gardens tends to make the soil acid. Lime should be applied about once in three years.

The lime should be applied in the manner: Wet the ground down about a foot. Scatter evenly over the surface line to the depth of about half an inch. Then spade the soil, working in the lime all through the soil by hoeing, raking and cultivating. The wheel hoe with cultivator teeth attached is an excellent tool for working in the lime. In a week or so after applying the lime planting may be done. Do not apply lime and manure at the same time. It is easy to test soil to determine its need of lime but even without testing one may use the lime with assurance of its value unless it is known that a thorough application has been made recently.

The test for acidity is as follows: Place some soil in a cup or glass with a trowel, not with the hand. Make it wet enough so that it can be stirred with a stick. Open a slit in the soil with a case-knife blade and insert a piece of blue litmus paper obtained at a drug store. Press the soil against the paper. In an hour remove the paper. If it is distinctly pink the soil is extremely acid. If it is faintly pink the soil is slightly acid.—C. L. S.

In interior valleys great care is required in getting plenty of water into soil before planting and great care in cultivating after each irrigation in order to prevent baking and drying out of the soil.

Irrigate regularly. If you begin irrigating once a week keep it up without change. If soil is sandy it may need irrigation often; if soil is heavy it needs water less often.

If the sprinkler is used get one that throws a fine spray like rain and leave it in each place until you are sure that the water has penetrated to a depth of from 12 to 24 inches.

RELIEF IN SIGHT?

Ben Gonnadooit says he will mow the weeds in his lane as soon as ever he can find time to fix his forge and weld that piece on the frame of the grindstone, so that he can grind the sickle and get the old mower in shape. He allows maybe things will shape themselves so's he can get at it t'morrow er next day.

COMING YOUR WAY

ARE YOU GOING TO ATTEND THE TRACTOR DEMONSTRATION AND LEARN WHAT POWER FARMING WILL DO FOR YOU? Another opportunity is knocking at your door and it bids you welcome. Come to the Tractor Demonstration and find out what **INTERNATIONAL TRACTORS** will do for you.

ON THE JOB WITH BOTH FEET

INTERNATIONAL TRACTORS will be shown and demonstrated both at the draw-bar and on the belt. 100 per cent Tractor service is what you are looking for and that is what we will show you, when you attend the demonstration.

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You know what a showing P. & O. Plows made at the Demonstration last year and you know that the P. & O. and the Chattanooga plows are the most popular plows on the market, but, did you know that these popular plow lines were new additions to the **INTERNATIONAL** line? From now on, we shall sell P. & O. and Chattanooga plows with our tractors—plows that have proved themselves as worthy to belong to the **INTERNATIONAL** line as any other machine or implement in the line. Other **INTERNATIONAL** implements will be displayed and operated with **INTERNATIONAL TRACTORS.** Don't miss this opportunity. Come to the Tractor Demonstration and find out for yourself what **INTERNATIONAL TRACTORS** and **INTERNATIONAL** P. & O. Plows and Implements will do for you.

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BETHLEHEM Tractor Spark Plugs are expressly built to meet *the unusual requirements of tractor service.* They are specialists.

Our engineers have carefully studied these requirements.

They have made extensive tests, both here in our own shops—*and in the tractor motors themselves, out in the fields, under the most difficult working conditions.*

They have developed a *line* of tractor plugs—for no *one* plug will meet the requirements of *all* tractors.

Consequently there is a type of Bethlehem tractor plug *for every type of tractor motor*—each plug more efficient in its particular field than any other we know of.

Get Bethlehem tractor plugs from your dealer. He knows which model is best suited to your particular make of tractor. He also carries Bethlehem plugs for motor cars, motor trucks and stationary engines of all types.

Don't use an automobile plug in your tractor.

¾-inch long mica tractor plug. Used as standard equipment on International Harvester Tractors and others.

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Better Blood—Better Birds

"GRADING UP"—a breeding practice which has been fundamental in improving dairy herds throughout the United States—is just as applicable for the betterment of poultry flocks, which respond as rapidly to the introduction of superior foreign blood, particularly by the use of standard-bred males, as do dairy cows.

Many a farmer is deterred from the purchase of standard-bred fowls at the offset because, perhaps, his neighbor may tell him that it is time and money wasted to "monkey" with standard breeds when he can secure "just as good" fowls in his immediate neighborhood at half the price.

The "just as good" mongrel fowls never give the results which come from the use of well-bred stock. Sooner or later, to his sorrow, the poultry man ascertains this fact. Then he is desirous of getting rid of his purchase and perhaps staying out of the poultry business entirely.

Does It Pay

to "grade up" the farm flock by the use of better blood? The answer may be found in the pictures. The handsome pullet shown in the lower illustration is the progeny of the "scrub" hen and pure-bred cockerel pictured above.

Interesting Experiments

In recent Government experiments, standard-bred White Plymouth Rock males were crossed with mongrel hens which weighed only 4.33 pounds apiece.

The first generation progeny of this union at the same age had an average weight of 5.68 pounds apiece, while the grade fowls, composing the second generation, weighed an average of 5.98 pounds apiece at the same age, and those of the third generation 6.49 pounds apiece.

The gain due to increased size and meat-making qualities which resulted the first year from the crossing work amounted to 1.35 pounds per bird. Naturally the greatest increase came during the first step in the up-grading work when the standard-bred male was mated with a mongrel hen.

The increase resulting from the mating of another standard-bred male of the same breed with the pullet of the above cross was not so great, amounting to only 0.3 of a pound, while the gain of the third year's investigations totaled 0.51 of a pound.

Similarly, of course, egg production may be increased by breeding up and selection, but from the standpoint of meat production alone this up-grading work should be extremely profitable to the average farmer, as the investigations show conclusively that the introduction of superior blood into the flock by the utilization of standard-bred males increases the meat producing and size increasing ability of the progeny. If the progeny of a grade hen, united with a standard-bred male, will weigh one and one-half to two pounds more at market time than will the same aged offspring of a mongrel hen and a common male, it should be easy to convince every farmer that it will be more profitable for him to keep better blood in his flock.

Poultry Pointers

Be sure that the male at the head of the flock is pure bred.

The Mediterranean or egg breeds are: Leghorn, Minorca, Ancona, Spanish and Blue Andalusian.

The American or general purpose breeds are: Plymouth Rock, Wyandotte, Rhode Island Red, Java, Dominique and Buckeye.

The Asiatic breeds are: Brahma, Cochin and Langshan.

The English breeds are: Sussex, Cornish, Dorking, Orpington and Redcap.

For general farm use the American breeds are probably the best.

Pure-bred poultry means uniformity of products. Uniformity of products means increased profits, if products are properly marketed.

Given the same care and feed, pure-bred fowls make a greater profit than mongrels.

Dipping for Lice Now Common Practice

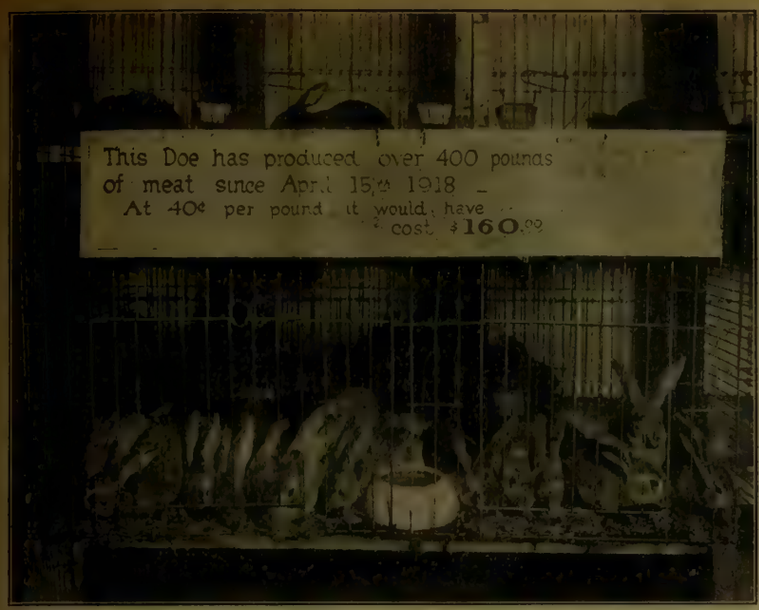
"Chick, the Dip" might be the name of a crook play or an underworld character. But "Dip the chick" is a slogan representing progress and conservation.

Dipping chickens is likely to become more general than dipping cattle, because the chicken louse is a more widely distributed insect than the cattle tick.

The "dip" consists of 1 ounce of sodium fluoride to the gallon of water, which should be at a temperature of 70 to 85 degrees. The dipping should be done on a clear, warm day—never on a cold day.

The old way of getting rid of chicken lice was by dusting with dry sodium fluoride. It was effective, but in the case of large flocks it was slow and wasteful, a great deal of the dusting material inevitably being lost.

Experiments conducted over a period of several months in Texas have convinced poultry experts that dipping is not only feasible, but also the surest and speediest means of ridding chickens of lice. General adoption of the plan all over the country seems inevitable. The idea is sponsored by the United States Department of Agriculture



Photograph, Courtesy Breeders' Bulletin

A Rabbit Tale That Rivals "Pigs Is Pigs"

This exhibit, which was viewed with the greatest interest by 25,000 persons at the Dallas (Texas) rabbit show, was made by J. R. Duke of that city, as an example of the wonderful prolificacy of New Zealand rabbits. The doe weighs 12 pounds. In 12 months she produced 400 pounds of meat, her litters never having been less than 10 in number. In the illustration she is seen with a litter of 13, the weight of which totaled 78 pounds. This is one answer to the H. C. of L.

Are We Downhearted? Decidedly Not!

THIS is an era of punch and pep. There's no reward for whining and no room for dead ones. And this applies to preaching, manufacturing, ranching, or publishing a farm paper.

Orchard and Farm fits into the busy life of the progressive food-producer whose hours are too full for "filler." He wants the meat with the shell removed, and that's what we're giving him. That's why Orchard and Farm is known as the brightest, snappiest, most "helpfully interesting" of farm magazines. And that's why we have only two classes of subscribers: New and re-new—no "dead ones." It is a saying among publishers that the quality of a magazine may be judged by the degree of difficulty in securing renewals. Very few readers who once become acquainted with Orchard and Farm ever want to be without it. Here are a few expressions that have accompanied remittances for renewals received within the past few weeks:

"I am sending my check for $1 for three years. This is too cheap for your paper."—R. L. Wilson, Central Point, Ore.

"Please find stamps for renewal. We find many helpful articles on subjects of interest to us."—F. W. Hare, Concord, Cal.

"I like your paper. It grows better every month."—Wm. M. Smith, Hemet, Cal.

"Your paper is perfectly splendid, and has helped us over many a rough place and saved us the necessity of learning by experience."—Margaret E. Dill, Ashland, Ore.

"I'm sorry I forgot to renew my subscription. Money enclosed. Please send me the July issue. Orchard and Farm is the best farm paper in the West. Wish you success."—Jacob Switzer, Albion, Cal.

"I find some very helpful articles in your paper, which I have been buying at the news-stand. I wish you every success, as you are helping the farmer a lot."—Glenn Ellison, Globe, Ariz.

"Enclosed find check for three years' subscription. We find Orchard and Farm about the best and most interesting farm paper going."—W. D. Campbell.

"I could not very well get along without Orchard and Farm."—W. W. Bailey, Seattle, Wash.

"I think so much of Orchard and Farm that I would not like to miss any copies. I pass it around to my neighbors to read. Orchard and Farm ought to be a regular visitor on every farm in the West, big or little, and on the Pacific Coast in particular."

"Orchard and Farm is the best I have seen. I find many things in it of interest."—Joshua Roberson, Vallejo, Cal.

"I find many very good articles in your paper. I pass my copy along to a party who at present is unable to take many magazines but likes to read and improve."—Mrs. A. H. Johnson, Monrovia, Cal.

"All members of my family value Orchard and Farm very highly and agree that in all lines it is surely incomparable."—Mrs. H. S. MacLean, Rialto, Cal.

"I have enjoyed Orchard and Farm and shall continue a subscriber as long as your paper exists."—Thomas L. Gray, Oakland, Cal.

"Orchard and Farm is the most reliable farm paper I've found and I always enjoy every page."—Mrs. C. E. Skaggs, San Francisco, Cal.

Have you noticed what a "fat" paper we have this month? Forty-eight pages—every advertising column crowded with interesting announcements. Read them, as well as the many "Helpful Hints" that make Orchard and Farm the "Silent Partner of the Successful Farmer." We are "on our toes"! We have a new Horticultural Editor, to whom I take pleasure in introducing you on another page. There's a page for the boys and girls this month, too. We're featuring the announcements of our friends the tractor dealers in this issue. Be sure to read them, and attend their demonstration if you can. Now I shall tell you a little secret. It is our ambition to make every reader of Orchard and Farm wonder how we can give him so much for his money. Do you?—The Editor.

California State Fair

Sacramento, California

AUGUST 30 TO SEPTEMBER 9, 1919

Our State's Tribute to Victory and Peace.

Opening of the New $300,000 Agricultural Pavilion, County Exhibits, Horticulture, Agriculture, Floriculture, Mining Exhibits, Manufacturing and Natural Resources.

California's Products on Display.

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Everything for the Home and Farm

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Write for detailed illustrated literature stating your requirements and we will send complete data.

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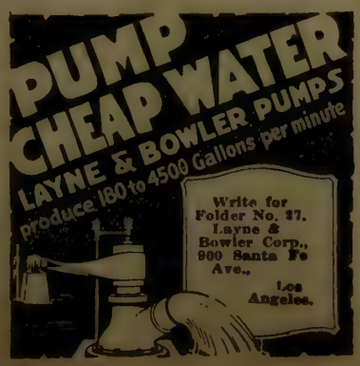

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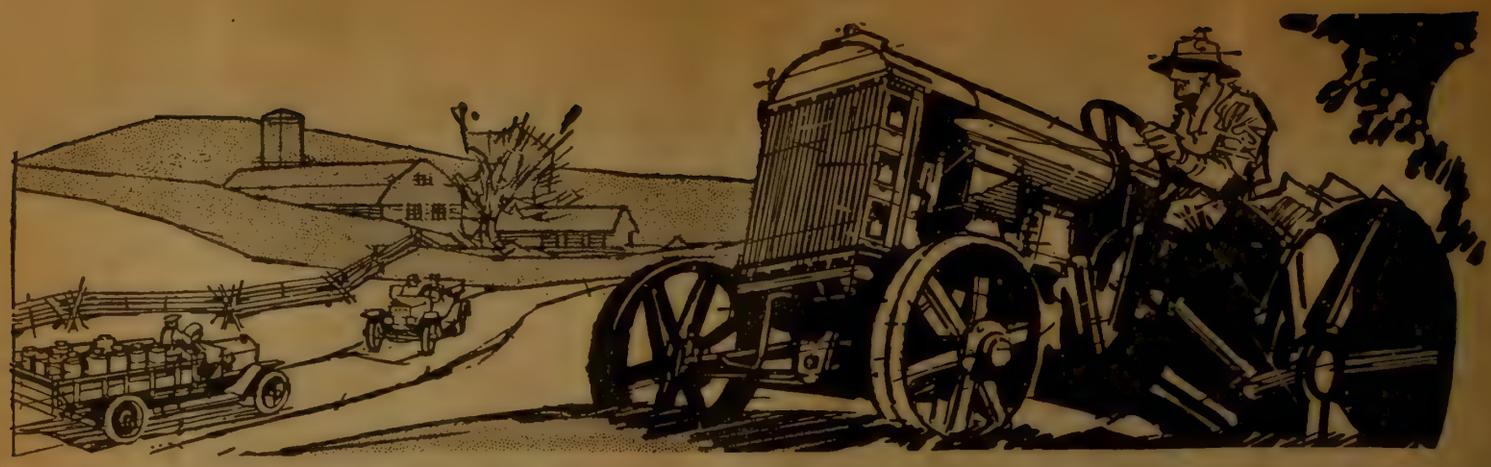


Tractor Progress

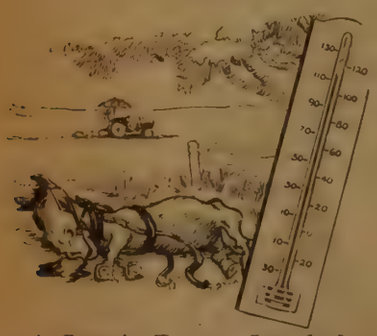
THE National Tractor Demonstration held at Wichita July 15 to 18 left little to be desired in point of numbers and size of exhibits. The attendance, however, was somewhat disappointing. This is ascribed by observing visitors to several factors, such as the weather, the fact that nearby farmers were still busy with their harvest, and the less probable surmise advanced by some visitors that Kansas is so well saturated with tractors and the tractor idea that demonstrations of this nature are **passe** in that territory.

Sixty-seven manufacturers of tractors were represented. Seventy-six makers of tractor equipment exhibited their products. Five companies building tractor-drawn implements showed their output. These were exclusive of five tractor manufacturers who also produce power farming implements. Twenty-four new models of established tractors in addition to machines exhibited for the first time were on the field. Five makes of motor cultivators were shown.

It is estimated that the total value of all machinery at the demonstration was one and one-half million dollars. In each of the foregoing statistics the Wichita demonstration exceeded all previous records.

Two thousand acres was occupied by the exhibits and plowing fields. About 1500 acres was plowed. The tent city was almost a mile in length, the "big top" housing the equipment exhibits being one of the largest tents ever erected.

The rapid progress of the tractor and allied industries is shown by comparison of the Wichita demonstration with the first tractor exhibition held at Omaha eight years ago, in which only seven manufacturers were represented, with machinery valued at less than $40,000.



A Certain Farmer Laughed

When a tractor dealer tried to sell him a machine on a hot summer day. "Why," he said, "the radiator would be boiling most of the time and the machine would soon burn itself up in this kind of weather." That afternoon one of his best horses dropped dead!

The Old Freighter Speaks

By Jason Wells

FIFTY years have passed away since first I hit th' trail
That led into th' Golden West, away f'm town and rail.
I had some great old cronies then, but Death has broke th' bond,
They's only Bill an' Tommy now—th' rest has gone beyond.

WE all could handle hosses in them days—an' that's no joke!
Six-up er twenty in a string—an' some of 'em we broke
Was worse'n outlaws—reared an' plunged an' tried t' turn a flop!
But thet was all before th' time o' this here engine crop.

WE didn't have no tractors then t' plow our virgin soil;
We didn't stack on gasoline t' do our hardest toil.
Them was th' good old days, you bet—and yet I must confess,
There's somethin' fascinatin'-like about this tractor mess.

T' RIDE on one and see it work sure gets into yer veins;
I'm gettin' so I'd ruther hold a wheel than bridle-reins!
And, yes, I like t' talk about th' cylinders, an' crank—
And tune th' carburetor—and fill up th' fuel tank.

OLD Bill and Tommy still prefers t' drive a team o' plugs;
They'd ruther holler gee-haw-whoa than work with bolts and lugs.
Why they don't think no engine made is worth one harness-ring.
So I reckon I have weakened—'cause I like this tractor-thing!

Pointers on Power Plowing

PLOWING with tractors presents many new problems and the use of horse-drawn plows has furnished no precedent for their solution. To eliminate or minimize the use of horse-drawn plows in commencing or finishing the work is one important consideration.

The methods in general use are divided into two classes—those in which the plows are elevated and no plowing is done across the ends, and those in which the plows are left in the ground continuously. In most cases better plowing can be done when the plows are idle across the ends of the field, and for this reason the methods of this class are more popular, but many farmers prefer the other methods, as they eliminate waste of time and labor.

System in Plowing

Plowmen using tractors wish to reduce to a minimum the time spent in running and in turning with plows out of the ground. Although it is necessary to do some traveling while the plows are idle, care should be taken not to do too much of it, as this reduces the number of acres which can be plowed in a day, making the tractor that much less efficient.

Short turns, however, are awkward for most tractors, and where such turns are necessary, the operator often has more or less difficulty in getting the outfit in the correct position for starting into the new furrow at the right point. Some tractors turn more easily in one direction than others, and this should be taken into consideration in laying out the fields.

Advantages Summarized

The advantages of plowing by the methods in which the plows are idle across the ends of the field are that the short, awkward turns are eliminated, except in some cases at the beginnings and ends of the lands, and usually less space will be left at the corners to be plowed with horses. The advantages of the other methods are that little or no time is lost in traveling with the plows out of the ground, and that ordinarily the number of dead furrows and back furrows will be considerably less.

In using the first-named methods it is necessary to measure the lands in the center of the field accurately, leaving an equal area on all sides of the field in which to turn the outfit and which can be plowed last by running the tractor completely around the field several times.

If one end of the field is unfenced the outfit can be pulled out into a road or lane or an adjoining field for turning. It may be preferable to plow up to the fence on the two sides as the body of the field is being plowed, and leave the headland only across the end of the field which is fenced. The width of the headland will depend largely on the turning radius of the tractor. With easily handled outfits it is not necessary to leave more than 15 or 20 feet, but plenty of room should always be left, and for this reason headlands 50 feet or more in width are preferable to narrower ones.

Careful Plowing Saves Time

If the field is to be finished up in the best manner, with no irregular, unplowed stripes between the land or at the edges, it is essential that care be taken to have the headland of the same width entirely around the field, to have the distances measured exactly when starting new lands, and

(Continued on Page 35)

Speed and Weight

THE drawbar pull of a tractor is limited by the weight of the tractor, notwithstanding the influence of other important factors. Tractors have been quite generally designed to operate at horse speeds, namely, two to two and one-half miles per hour, because field machines have been designed to be drawn by horses. It is now possible, due to the improvement in the design of internal combustion motors, reducing weight thereof, to provide a tractor with a large motor that can be utilized at normal field speeds due to the limiting of drawbar pull by the weight of the tractor.

There are many conflicting opinions advanced in this connection among which are those concerning the influence of the increased speed upon the draft of the plow as now designed. Thirty-one tests with a general purpose plow with all conditions constant (depth 7 inches) would indicate the following:

Draft, general purpose plow—1 mile per hour, 100%.

Draft, general purpose plow—2 miles per hour, 113%.

Draft general purpose plow—3 miles per hour, 125%.

Draft general purpose plow—4 miles per hour, 138%.

It is to be further noted in this connection that the work of pulverization of furrow slice at four miles was much greater and represented better plowing in every respect.—J. B. Davidson.

About Night Plowing

One of the best ways to reduce the overhead expense in tractor operation is to lengthen the hours for work. Several makes of tractors are now regularly equipped for night work. Others may readily be converted into "owls" by the addition of electric or acetylene lamps. One large manufacturing concern is specializing in tractor lamps. The usual equipment is a powerful headlight and a smaller, shaded light at the rear to facilitate operation of the implement in use. Experienced operators also favor the use of a movable "spotlight," such as is used on automobiles, to be used in locating landmarks, boulders and stumps, or to show the way in turning.

PROSPERITY and the YUBA

The 12-20 Yuba Tractor pulling an 8-foot chisel in orange grove on C. C. Chapman Ranch, Fullerton. This is an ideal orchard outfit; built low, easy to handle, gears enclosed in oil bath, all steel and cast steel construction.

A 12-20 Yuba Tractor working on the Bastanchury Ranch at Fullerton. Each tractor pulling a double action disc harrow putting soil in fine condition. These tractors are working on hills with 20% grade and with three speeds forward they do this work with ease.

Yuba Ball Tread Tractor

Your confidence must be invested with your money when buying a tractor. Your confidence in the YUBA Ball Tread Tractor will grow with investigation. Talk to YUBA owners about performance, about upkeep, about repairs, about how long YUBAS last and how much work they do.

There are YUBA tractors all around the country. Most of them are on the properties of prosperous farmers who keep books and know production costs. Investigate. The owners are your best source of information. Talk with them.

Yuba Manufacturing Company

Marysville, California

Sold by

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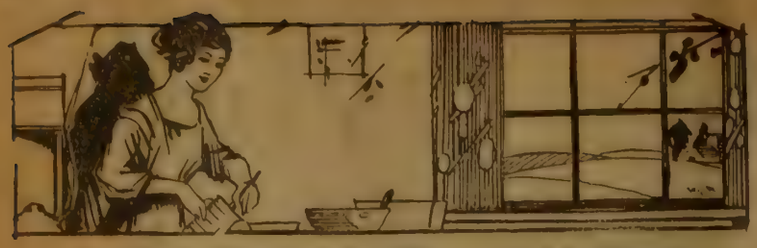

Isabel Sinclair's Household Hints

Round Steak Recipe

Buy one and one-half pounds of round steak, cut thin. Cut into strips or pieces three inches long by two inches wide. On each piece lay a slice of bacon and some chopped onion. Roll up with bacon and onions inside and fasten with a toothpick, or tie with string.

Roll in flour and brown in fat. Then pour a little water in the skillet and steam for an hour. Replenish water as necessary.

This will make the toughest round steak tender, and the onions and bacon add a distinctive flavor which converts a common dish into a delightful delicacy.

Be on the safe side. When on your vacation camping trip or when traveling take a little box of pyrethrum powder with you. Some of the powder dusted between the sheets of a bed which you fear may contain unwelcome bedfellows will protect you from their ravages.

Cleaning Silk Ribbon

Spread the ribbon flat on a smooth, hard surface like a table top or a marble slab and sponge or brush with lukewarm water in which a little mild soap has been dissolved. Rinse by holding the ribbon stretched between the hands and passing it through a bowl of clear water of the same temperature. Dry by spreading it out straight and flat on a smooth, hard surface. Draw the hand gently over it to press out air bubbles which may have formed under the ribbon and would make it look "blistered" when dry.

When making sandwiches, if the butter is too hard to spread easily, dip a bowl in hot water, or put it in the oven until it is thoroughly heated, then turn it over the butter, which will in a few moments become soft throughout. The same method may be used for softening butter for the table.

Moods

By June Frances Dale

Loneliness engulfs me! Oh, the lights—
The brilliant lights; the swaying, maddened throng;
The laughter (true or false?); the dizzy nights;
A rose; a stolen kiss; a snatch of song!

A summer eve—and love—all dreamy, sweet;
Attuned, my heart and soft the mellow glow
That filters through the boughs of my retreat,
As Zephyr fairies weave them to and fro.

Canning Grape Juice

White grape juice may successfully be canned but red juice loses its color in cans, as shown by experiments conducted by the Viticultural Division of the university. The process is very simple. Crush and press the grapes. Heat the juice to 150 degrees F. Allow to cool. Strain or filter. Heat to 130 degrees F. Can. Seal. Sterilize 30 minutes in water kept at 175 degrees F. This juice has a remarkably fresh flavor and has been held successfully for over three years. It is a good beverage and could also be exported for white wine making. Wineries could undertake its production with little additional cost to present equipment.

Wash new stockings before wearing to remove the sizing; otherwise holes may appear at once.

Remember that "shine" on wool garments is caused by the wearing down of the nap and sometimes by grease. Remove by sponging, pressing and brushing up the nap with a stiff brush. A tablespoon of ammonia to a quart of tepid water may be used for sponging.

"Montana" Steak

Mutton cooked in the following manner is appetizing and nutritious:

1 pound lean mutton free from bone.
1 egg.
½ cup milk.
1 teaspoon salt.
¼ teaspoon pepper.
Few drops onion juice.

Chop the meat fine, add the other ingredients, form into small cakes, and either broil or fry them. While this dish is more delicate if the egg and milk are used, it can be made without them. In this case it very closely resembles "Liberty" steak as ordinarily prepared from beef. It may be made with or without onion.

Ways to Freshen Velvet

Velvets become defaced by having the pile or nap crushed. This can often be raised again by careful steaming. Lay a wet cloth over the back of the velvet, lift the two together and pass them over an inverted hot iron, holding the wet cloth next to the iron; or hold the velvet stretched over the steam from a vessel of hot water or a steam spreader on the spout of a teakettle, with the back of the velvet toward the steam.

Dust may be removed from velvet by brushing, then sponging carefully and steaming.

Sperry Rolled O
are specially kiln

That's all important because it elim
which gives ordinary rolled oats that str
Sperry Rolled Oats are so pure and t
that you'll notice the difference at onc
process of kiln-drying that brings out th

—that's why they tast

And not only do you get full fla
Rolled Oats—you get full food-value, t
suppose that Sperry Rolled Oats can be
fast dish. Here, for example, are two unc
this wholesome and delicious cereal:

Note: All measurements are level. Flour is sifted once before measuring. A half pint measuring cup is used.

Sperry Rolled Oat Cookies

½ cup shortening; 1 cup sugar, granulated or brown; 1 egg; ⅓ cup milk; 1¾ cups Sperry Rolled Oats; ½ cup chopped raisins; ½ cup chopped walnuts; 1½ cups Sperry Drifted Snow Flour; ½ teaspoon salt; ½ teaspoon soda; 1 teaspoon cinnamon; 1 teaspoon nutmeg.

Cream shortening well, add gradually, while beating constantly, sugar. Then add egg, well beaten, milk, Sperry Rolled Oats, rai and sift dry ingredients a from tip of spoon on we apart, and bake in a moc

Sperry Rolle

Pour left-over cooked cups. When cold scoop seasoned chopped cook moderate oven until brow

Ask for Sperry Rolled Oats in the fa
Package—at the store where you do yo

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's our special
ut-like flavor.
etter!
alue in Sperry
Nor must you
nly as a break-
on ways to use

opped nuts. Mix
rst mixture. Drop
n, about 3 inches
about 15 minutes.

Timbales
into wet custard
and fill with well-
fish. Place in a
ith a tomato sauce.

ed
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Coast A81

LLED OATS
Product"

SEPTEMBER brings so many beautiful flowers into their prime that many of us are prone to forget the planting of other varieties. It is too late, of course, to start a general garden, unless you live in the semi-tropical part of California, the section extending along the southern coast from Santa Barbara to San Diego, which is only a few miles broad. In this region, which is practically frostless, it is possible for the fortunate possessor of sufficient irrigating water to start gardens of all kinds in any month of the year.

The water problem has been very distressing to many of us who are lovers of beautiful gardens. I have been unable to have a flower garden for more than a year and a half. I soon found the futility of trying to raise flowers without water for irrigation. The importance of water is especially apparent to me because I moved from the southern coast, where water was plentiful, to the Sacramento Valley, where we have had very little. Nevertheless, there are a great many plants and flowers that can be started now throughout the Pacific West.

The great variety of flowers obtained and the luxuriance of blossome more than justify the small amount of time it requires to plant bulbs. I think there is no type more interesting than the bulbous plants, and always feel so pleased to see their first blooms in the spring. Those early blossoms alone will give you enough pleasure to repay you for your trouble. You can plant tulips, narcissus, hyacinths, crocus, freesias, irises and gladiolas this month.

The varieties and colors of these bulbous plants are so many, however, that each gardener must choose those which will best harmonize with their surroundings when they are in bloom. If you want those of the same variety to begin blooming at the same time, plant them at the same depth.

The bulbs that you wish to lift out and reset every year need be planted at a distance apart of only twice their diameter, while those which you wish to leave throughout several seasons must be planted at intervals equal to six times their diameter.

The bulbs that are to be used as a border for a path should be those of the shorter variety, such as the dwarf garden iris, or any other bulbous plant that does not grow more than 12 inches high. Bulbs that are used as a border for shrubbery are usually planted informally, and are seldom lifted out and reset. These should be planted, however, so that the taller plants will be in the background. Always remember that a careful selection of colors is most important. Most bulbous plants have flowers that are of very striking shades; to get the most pleasing effect, therefore, plant bulbs that blend and harmonize with their surroundings. Because of the many, many colors and shades available, this is not a difficult matter.

Bulbs will do well in almost any medium soil. If the soil is too rich, however, they do not produce very many flowers, but the stems and leaves grow very large, and are inclined to be rather coarse. Sticky adobe should be mixed thoroughly with well-rotted stable manure and lime. Clay soil should be mixed with half sand and well-rotted cow manure and lime. If you are choosing land upon which you expect to grow bulbs for the market, the river loam soil seems to be the best of all, according to those who have grown bulbs for that purpose.

It is late for violets, but they may still be started, especially the hardier varieties, such as the Princess of Wales, or Giant, and the Marie Louise. The former is the hardier of these two hardy varieties, but needs a cooler, more moist climate than the Marie Louise, and therefore does better near the coast. The Marie Louise is more adapted to the interior.

When starting violets in September it is best to add a small amount of lime to the soil. The lime should be thoroughly mixed with thoroughly rotted cow manure, both of which must be mixed into the soil. Violets planted in September have an opportunity to become well established before the cold weather sets in.

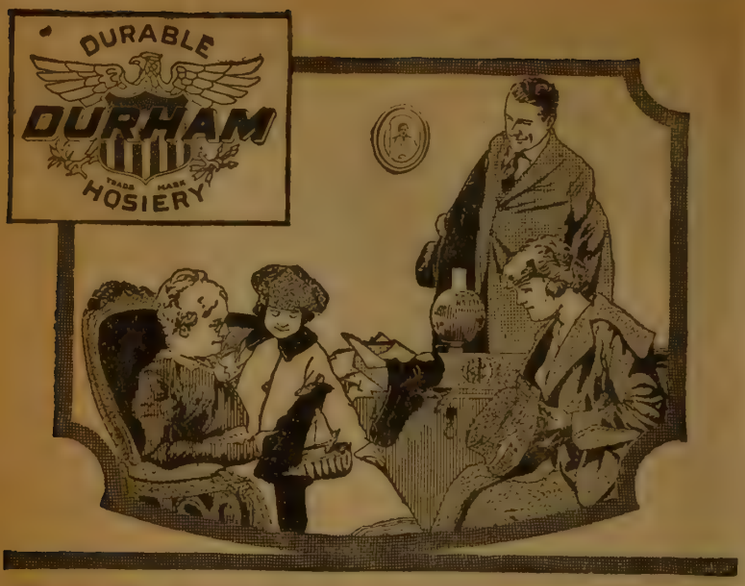
Cypress and Eucalyptus

If you are planning a hedge of cypress or a driveway of eucalyptus trees, it is now time to sow the seeds. They should be sown in shallow boxes or pans, having holes in the bottom for drainage. The bottom of the boxes or pans should be covered with coarse gravel or small pebbles. For the soil, use leaf mold, thoroughly mixed with about one-third its bulk of garden loam. The boxes or pans should be protected with muslin-covered frames from extreme weather. The seeds planted now will be sturdy little trees, ready to be planted out in the open ground in February or March.

Start Christmas Coleus

A bright flower in the house in the winter time helps to keep us cheerful, even when it is rainy and dark. Last winter my coleuses kept the house cheerful enough to make me feel glad that I had made room for them in front of a window. Then yielding to family arguments that they "took up too much room," I moved them outdoors. Needless to say, they were killed by the frost. I have stocked up with them again, however, and am going to overrun

(Continued on Page 39)



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Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, "Examiner" Building, Los Angeles.

2956—Lady's Dress
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5¾ yards of 44-inch material. Price 10 cents.

2940—Girl's Dress
Cut in 4 sizes: 8, 10, 12 and 14 years. Size 10 will require 4¼ yards of 30-inch material. Price 10 cents.

2931—Girl's Dress
Cut in 4 sizes: 6, 8, 10 and 12 years. Size 8 requires 3¼ yards of 36-inch material. Price 10 cents.

2950—A Stylish Frock
Cut in 3 sizes: 16, 18 and 20 years. size 18 will require 4⅞ yards of 44-inch material. Width of skirt at lower edge, is about 1½ yard. Price 10 cents.

2819—Child's Dress
Cut in 3 sizes: 2, 4 and 6 years. Size 4 requires 2¾ yards of 36-inch material. Price 10 cents.

2962—Practical Work Dress
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5⅜ yards of 36-inch material. Width of dress at lower edge is about 2¼ yards. Price 10 cents.

2938-2941—A Business Costume
Waist 2938 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 will require 3 yards of 36-inch material. Skirt 2941 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. Size 24 will require 3¼ yards of 32-inch material. Width at lower edge of skirt, is about 1½ yards. Two separate patterns, 10 cents for each pattern.

2947—Lady's Apron
Cut in 4 sizes: Small, medium, large and extra large. Size medium requires 4½ yards of 36 inch material. Price 10 cents.

2787—Boy's Suit
Cut in 4 sizes: 2, 3, 4 and 5 years. Size 4 will require 1⅞ yards of 27-inch material for the blouse and 1⅛ yards for the trousers. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for our up-to-date fall and winter, 1919-1920 catalogue, containing 350 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also, "Some Points for the Needle," illustrating 30 of the various simple stitches. This book contains many valuable hints for the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find ..... cents, for which send me the following patterns

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Pattern No..... Size.....

Pattern No..... Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

A fair land; a gay land—where Hope's brave beacon gleams;
A land of gifts and promises—the Land of Youthful Dreams.

Girl Wins Pig Prize

IN THE pig-fattening contest of the Kern Delta Farm Center Agriculture Club, which was recently completed, Dorothy Lean of Old River, competing against seven boys and girls, won first prize.

Dorothy brought a 47-pound Poland China pig up to a weight of 207 pounds in 104 days, or a total gain of 160 pounds. The cost per pound of gain was 12.7 cents, the total net profit on the pig when sold amounting to $14.05.

A Big Profit

One of the best showings made in Central California contests this year was that of Fred Townsend, winner of the Rosedale Farm Center contest, who entered a pure-bred Poland China barrow.

Good breeding, combined with good feeding and the care of an interested boy, caused this hog, weighed in at 133 pounds, to gain 208 pounds in 90 days, or an average of 2.31 pounds a day. This gain cost Fred 9.4 cents a pound, but left him a net profit of $21.18, or over 50 per cent on his investment.

Spiteful!

I wish I were a crow's egg,
Bad as bad could be—
Hiding in a swaying nest
Way up in a tree.
I wish that mean old Johnny Brown
Would climb up there to see—
Then, sure as Fate, I'd bust myself
And cover him with me!

Young Bean Grower

Wilbur Barrett of Whatcom County, Washington, made $65 profit from his one-tenth acre of beans. Wilbur is a member of the boys' and girls' club of his county, organized by the United States Department of Agriculture and the State Agricultural College.

His seed—six pounds of Kentucky Wonder pole beans and three pounds of bush beans—was planted on land which had never been cropped. It required 1,420 poles to stake the plants when the vines began to run.

He writes in his report: "The most fun was picking the long fat pods. At one picking I would get as high as fourteen big sacks. I spent $16 of the $65 I made for clothes, $2 for an air gun, $7 for some rabbits, and gave the rest to my father to help toward buying an auto in which to go to school."

One Boy's Plan

I have made quite a little money selling bird houses to neighboring farmers. I love birds and have many houses in our trees and around the buildings; some of them very elaborate. My plan is to take a sample house to the farmer and explain to him the advantages of protecting song birds. Then I offer the pretty little bird house cheap. I make them from odd bits of boards on Saturdays or during vacation. It doesn't take long. Martin houses should be painted white, but it is better to stain others a dark green or brown. — Joe Reeves, Fresno County, Cal.

His Own Story

Floyd Medlock, formerly of Tempe, Ariz., but now living near Phoenix, who won the national championship in the boys' cotton club work of the Agricultural Extension Service two years ago, is now hoeing his own row as a real farmer. The following, taken from his recent letter, tells the story in an interesting way:

"On the 18th of February, 1919, I leased ten acres of cotton for $35 per acre. I then sold my lease for $87.50 an acre. I next leased a five-acre tract on shares. I am to do all the work and get one-half of the crop. Against this, the owner furnishes the land and water and harvests his share. The 19th of May I bought one-half interest in six acres of cotton at $15 per acre. On May 22 I leased twenty acres of maize, and on June 3 I bought ten acres of cotton for $500.

"With fair luck, I figured I should make about $1500 on my cotton and $1200 on my maize. I'm keeping careful records, taught me through club work, and will be able to furnish exact figures at the close of the season. In 1920 I expect to plant 160 acres all to cotton.

"Best of all, club work has given me general experience while only a mere boy, and now at 19 I have my whole life before me and know just how to proceed. I owe a debt of gratitude to the banks for their help, and the experience in dealing with them has given me unlimited confidence to go ahead. Club work has been a big help to me and I hope other boys will be benefited as much as I have."

Gets His Calf

Another interesting story comes from Washington, and shows what determination will do for the boy who wants to succeed. In Klickitat County lives Alfred Olson, a member of the local Calf Club. With his pure bred Jersey heifer calf, Arca's Babe, he won the State championship prize last year. In 1917 Alfred became interested in the Calf Club work, but a pure bred calf costs money, and he did not have funds to buy that requisite for membership.

To enroll in a garden club as the first step toward entering the Calf Club may seem unusual, but that was what the Klickitat County boy did, and he reached the desired goal. The weeds in his Club garden kept him busy all summer, but he gave it such faithful care that his vegetables were prize winners. He exhibited a collection of them at the State fair and took $60 worth of prizes.

Meanwhile he had been writing to Jersey breeders for prices and descriptions of calves. He decided on Jerseys because that was the breed his father had. With $40 of his garden prize money he bought a month-old Jersey heifer calf in October.

What Is Your Plan?

Boys and Girls—for each of the five best letters telling how you have made money for yourself, either in club work or through some plan of your own, Orchard and Farm will give four thrift stamps. Tell the story in your own way in not more than 200 words and write your name and address plainly. Address Editor Orchard and Farm, Examiner Bldg., Los Angeles.

FIVE STANDARD AUTOMATIC SUBSOILER

Catalog No. 34

Killefer Quality

Killefer Efficiency

Subsoil and Chisel While the Ground Is Dry

Subsoiling is coming to be recognized as the most successful method of opening the ground to receive the winter rainfall and conserve the moisture.

Ranchers who subsoiled last year have reaped the benefits in increased crops over those who used the old methods.

One rancher of Imperial Valley reports a gain from six sacks of grain per acre to twenty-seven sacks; many others are reporting equal gains.

Our Automatic Subsoiler is a great improvement over the old style hand wheel and screw lift, as it eliminates all physical effort in raising it out of the ground. We also build the three standard subsoiler with the automatic lift.

Write for our booklet on Deep Tillage vs. Old Methods, which contains personal letters from those who have subsoiled or chiseled their land, and have increased their yield from 100 to 150 per cent.

We will demonstrate our full line of Tractor Implements at the demonstration to be held at Los Angeles, September 13th to 20th.

The Killefer Manufacturing Company
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SOUTHERN CALIFORNIA FAIR
RIVERSIDE, OCTOBER 7 TO 11, 1919

The Seventh Annual Meeting of the Great Agricultural and Livestock Exhibition of Southern California.

GREATEST LIVESTOCK SHOW EVER HELD IN THE SOUTHWEST. AGRICULTURAL AND HORTICULTURAL EXHIBITS UNSURPASSED.

Racing Program Unequaled by Past Meets on This Fast Track. Four Days Racing

Greatest Goat Exhibit Ever Held. An Unusually Large Showing of Poultry and Rabbits Promised.

Special railroad rates to exhibitors. Loading facilities at Fair Grounds. Liberal Premium offers and careful attention to all exhibitors.

With ample time between our dates and those of other principal California Fairs exhibitors will have ample time to move and rest stock.

Write for Premium List.

W. W. VAN PELT, Secretary,
RIVERSIDE, CAL.

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"The name 'Giant' on a case or a stick of powder is evidence that the powder is made by the company that originated Giant Powders. Remember this: You can't get Giant results when you use ordinary dynamites that look like Giant but aren't marked Giant."

Look into the new, money-saving methods of clearing land, blasting tree beds, ditches, boulders, etc. They are all described in our up-to-the-minute book, "Better Farming with Giant Farm Powders." A post card will bring it by the first mail.

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A New Livestock Era Dawning

The movement for improvement of the nation's livestock has been growing and progressing for years. But new life has been injected into the situation by the announcement that the United States Department of Agriculture will inaugurate on October first a nation-wide "drive" with the slogan: Better Sires, Better Stock, which is expected to sound the knell and complete the rout of the scrub sire. This will be the first organized campaign of its kind ever attempted throughout a great nation. Every farmer will ultimately benefit himself and his community by taking part.

THE "scrub" pure-bred as well as the "grade scrub" is scheduled for early slaughter as a result of the decision of the Department of Agriculture to launch an organized drive for improvement of the Nation's livestock. For there are many animals carrying pedigrees which, because of inferior conformation or other imperfections, have no more right to consideration than the ordinary scrub. The time has passed when any animal carrying "the papers" could pass for an ideal type.

It is now recognized that much harm has been done by the exploitation of inferior stock for which the owner was able to produce registration certificates. The plan of the coming campaign, therefore, is to educate farmers, generally, as to the points of true value in the selection of breeding stock, as well as the advantages of using pure-bred sires on grade herds or flocks for the purpose of improving the strictly utility types.

All Breeders Affected

Naturally, such a drive cannot fail to have also a beneficial effect upon the breeding industry, and to encourage the continuance and increase of breeding establishments. For the demand for good sires is certain to be greatly increased, and the entire livestock industry, in fact, rejuvenated.

One result of the campaign will probably be an increase in the present almost prohibitive prices of high-class breeding stock. The suggestion of the department for offsetting this factor is that sires be purchased co-operatively by two or more farmers or by farmers' organizations. Co-operative bull associations are already

Copy of Letter Sent to Secretary of Agriculture Houston

August 1, 1919.

Hon. David F. Houston
Secretary of Agriculture
Washington, D. C.
My Dear Sir:

It affords me great pleasure to offer the Department the unqualified support of Orchard and Farm in the campaign for "Better sires, better stock" which you are about to launch.

Orchard and Farm has long recognized the need and value of pure-bred livestock and not only has consistently encouraged the breeding of registered stock, but also has urged the improvement of all stock kept upon general farms, "from family milch-cows to poultry and even dogs." This magazine has furthermore undertaken to awaken the orchardists of the Pacific West to the need of more and better livestock in fruit-producing sections and upon our many highly-specialized farms.

While our province, as a monthly magazine, is a little different from that of the ordinary journals which are able to devote considerable space to current news of the livestock and breeding world, market reports and similar material, still we have never overlooked any opportunity to encourage livestock breeding and raising. And in spite of the fact that we must compress each month into from 36 to 52 pages, a vast amount of subject matter dealing with the multiform interests of our more than 100,000 readers, we have continually hammered home (and shall continue to do so) the very idea which you have selected as the basis for your coming campaign.

With further assurance of our interest in and support of this, as well as the many other laudable undertakings of the Department, and with due recognition of its great work, I am, Sir,

Very respectfully yours,

Jas. C. Kuolin
Editor.

in successful operation in many sections of the country, and the joint ownership idea, which is not new, undoubtedly will be adopted in many new localities.

Naturally, all of the pure-bred record associations are strongly behind the movement, and it is also endorsed by the agricultural colleges and all branches of the meat industry.

Farmers who agree to use nothing but pure-bred sires will be awarded medals, while blank forms, for the transcribing of pledges, will be distributed in the near future.

But why conduct such a drive? Does not America stand for the best in livestock breeding? The answer is found in cold statistics.

Nation's Milk Average Low

For many years this country has contained thousands of the finest specimens of livestock in the world, but in spite of this fact the quality and productive capacity of the average farm herd and flock is still low. For instance, the average dairy cow in the United States yields about 4,000 pounds of milk a year, a figure scarcely two-thirds the average production in some European countries, such as Denmark.

The difference in milk yield is due in large measure to a difference in breeding, but a herd of low production can be improved rapidly by the use of a pure-bred sire from a family of high producers.

One Cow Equals Five

An Oregon boy was influenced to buy a high-grade cow for $155. The cow on freshening gave 24 quarts of milk and kept it up for a long period. The father owned five cows, the average cows for the neighborhood. They were fresh in the spring. Their product did not equal the product of the cow owned by the son, although representing five times the labor and five times the feed in comparison with the one good cow.

And the principles are not confined to dairy animals. Among all classes of livestock a similar condition exists. Proper breeding of beef animals results in better and more uniform stock, having a greater percentage of desirable cuts of meat and a smaller quantity of bone, offal and inedible parts.

High-Class Bully Beef

An Oklahoma farmer had two registered Shorthorn yearling bulls that he priced at $100 each for breeding purposes. A butcher saw the bulls, asked the price, but learned that they were registered and that it would take $100 each to buy them. He bought them, killed them and stated that they were the cheapest cattle he had bought for some time, because they cut the better kinds of beef, and more of it.

Likewise in swine, sheep, goat and poultry production, the kind of parent stock largely determines the quality and market value of the products. The crusade of improvement now to be undertaken is the outgrowth of investigations in genetics, of livestock observations in many countries, and a close study of public opinion. In most livestock regions of the world a gradual evolution toward better livestock has been taking place for centuries. The rapidity of these changes has an important bearing on world commerce and on the prosperity of the nations in which improvement has been greatest.

It will be observed that the plan in no way interferes with any work in livestock improvement now being conducted, but instead it is expected to make all the work more definite and effective by providing official recognition for progressive breeders, including members of boys' and girls' clubs. Friendly competition is expected to spring up among communities and entire States, each of which will seek to excel in the rate of livestock progress.

Educational Series No. 1

What You Must Have in the Tractor You Buy

Economy

A three or four-plow tractor should not burn over fifteen gallons of distillate in a ten-hour run. It should be so perfectly cooled that a gallon of oil will be the maximum consumption in ten hours. Any greater amount is pure waste.

The Wallis, America's Foremost Tractor, built by the J. I. Case Plow Works, burns one gallon of distillate per hour. It consumes less than three-quarters of a gallon of oil per ten-hour run. It will plow twelve acres of land in ten hours at a cost in fuel of fifteen cents per acre. It is the most economical tractor manufactured.

Complete Protection From Dust and Dirt

The greatest enemy of all tractors is the dust and dirt that collects in exposed working parts. The dust and necessary oil for lubrication forms a mixture that cuts like emery and soon wears down the metal.

In the Wallis there is not a working part exposed—not a grain of dust can collect on any working part, for the entire mechanism is in a dust-proof metal case.

Simple and Accessible Construction

No matter how perfect is a piece of machinery there are times when it needs attention and repair. Your tractor must be simple so you can make adjustments and repairs yourself. It must be easy to take down so that when you need a mechanic he will be able to do his work rapidly. His time means money!

Every working part of the Wallis Tractor may be reached, through the port holes on the sides of the crank case, through the transmission case cover, through the door into the clutch compartment. Every working part you can adjust yourself. It is simple beyond comparison. It is as fool-proof as a long-handled shovel.

Operating Simplicity

You must have a tractor that you can operate as easily as you drive your car; you or your son or your ranch man. It must be so simple that a skilled operator is unnecessary.

Any fifteen-year-old boy can learn to drive, operate and care for a Wallis Tractor in a day. Part of our Service is to teach you and your men to care for your tractor. It is our protection as well as yours.

Plenty of Reserve Power

The average pull in draw bar pounds of one twelve-inch plow sunk eight inches in the ground in average California soil is five hundred pounds. When a tractor with fifteen hundred pounds draw bar capacity pulls three plows, it is pulling its maximum at all times. It is like driving your automobile fifty miles an hour every hour it runs. It cannot last long at that rate. If your tractor strikes a hard strata it is stuck. You must have reserve power to prolong the life of your tractor, to help you through the hard places, to keep down your repair expenses.

The average draw bar pull of the Wallis is twenty-five hundred pounds. This is equivalent to five twelve-inch plows. We recommend three twelves or three fourteens. The maximum draw bar pull of the Wallis is thirty-two hundred and fifty pounds under official dynamometer test! Two hundred and fifty pounds more than the tractor weighs!

Light Weight and Average Speed

It takes power to move weight. The more your tractor weighs, the less power you have left to pull your tools. It must be light so it won't pack the soil. It must be light to give you economy and at the same time reserve power. It must have a plowing speed of not less than two nor more than three miles per hour. Fast enough for economy and slow enough to prevent tearing up your tools.

The Wallis weighs three thousand pounds. It weighs less than half as much as many of its competitors. It has a plowing speed of two and one-half miles per hour. It is the lightest weight tractor in the world for the draw bar pull. It gets its traction from its speed and power and not from excessive weight.

WALLIS
AMERICA'S FOREMOST
TRACTOR

Self Lubrication

Grease cups are an annoyance. It takes time to turn them up. The grease hardens and does not lubricate. They fall off and are lost. You forget their existence and a bearing wears out. The more grease cups you have on your tractor the more troubles you lay up for yourself.

Every working part of the Wallis runs in a continual bath of oil. It is self lubricating throughout. There are only THREE necessary evils on the whole tractor—only three grease cups. And they stare you in the face, so you can't forget them.

Sturdy Construction

This means long life in the tractor you buy. It must be made of the best materials that can be found. Cast iron is cheap, so many tractor manufacturers use it. But cast iron is brittle. It breaks easily and wears out rapidly. Investigate the materials in the tractor you buy. Keep away from cast iron gears and housings. The best materials cost a little more, but they are the cheapest in the long run.

The Wallis Tractor is built of steel. There is not a piece of cast iron used in its construction. Even the motor block is built of gray iron, or, semi-steel. The gears are heat treated and drop forged. The bearings are Timken and Hyatts. The cylinder walls are of steel and removable. It is built of the best materials money can buy. It is the tractor you will eventually buy! Write today for a catalogue.

About the first of September we will move to our new home on the corner of Sixth and Maple, at the Pacific Electric Station. The first exclusive home for the sale of automotive farm power on the Pacific Coast. Temporary offices at 756 South Broadway.

Attend our tractor short course to be held during the Fourth Annual Tractor Demonstration at Los Angeles September 16th to 21st at Crescent and Melrose avenues. Drive out Wilshire boulevard to Crescent, then north to Melrose. You can't miss it.

DOUGLAS BOSWELL COMPANY

Los Angeles Branch
756 SOUTH BROADWAY

Pacific Coast Distributors for
WALLIS TRACTORS
J. I. CASE IMPLEMENTS
ACME MOTOR TRUCKS

Branches and Dealers Everywhere.

COUPON
Cut This Out and Mail It Today
Douglas Boswell Company, Dept. B
756 South Broadway,
Los Angeles.
As I will be unable to regularly attend your tractor short course, please send me full information with literature on the Wallis Tractor.
Name .....
Address .....
Town .....

MOLINE WIDE SPREAD SPREADER

With Straw Spreading Attachment

With this spreader you can drive through doors and narrow places, as the box is only 38 inches wide, yet you can spread the manure in a wide even sheet.

The Moline Line of Implements
Plows (steel and chilled)
Harrows
Planters
Cultivators
Grain Drills
Lime Sowers
Mowers
Hay Rakes
Hay Loaders
Hay Stackers
Grain Binders
Corn Binders
Pitless Scales
Spreaders
Wagons
Moline-Universal Tractors
Stephens Salient Six Automobiles

It is low down, easy to load, strongly constructed, light in draft, and the second beater thoroughly pulverizes the manure, spreading it in a wide, even sheet beyond the wheel tracks. One lever operates the entire spreader.

This spreader can also be equipped with a straw spreading attachment which is illustrated here. It is easily attached and spreads straw in a wide, even sheet, as thinly as you desire, even on windy days

Straw is worth from $4 to $8 a ton as fertilizer and as a top dressing for winter wheat.

You can make more profit from your manure and straw with this Moline spreader.

See your Moline Dealer now about getting one or write us for full information.

MOLINE PLOW CO., MOLINE, ILL.
MANUFACTURERS OF QUALITY FARM IMPLEMENTS SINCE 1865

Certification of Grade Cows

THE recent announcement by the University that a plan had been worked out for the issuance of certificates of production for grade cows was greeted with general approval throughout the State. It is felt that this work will greatly benefit the dairy industry.

Never before have the values of grade cows been so high. Yet many animals which have brought good figures during the past year would have commanded twice as much money had they been backed by authentic certificates showing the results of official tests. And the heifer calves of "certified" cows likewise are in greater demand.

At one recent public auction in this State, heifers from a cow that had been the leading grade cow in the recent California State Dairy Cow Competition, sold for more than twice the price of heifers that looked just as promising, but whose dams had no official proof of production.

It is "uphill business" to build up a dairy herd from cows bought on the market with nothing to show their value, while if it were possible to buy cows that were known producers, or even heifers from such cows, it would be a simple matter by breeding them to a well-selected, pure-bred sire, to build up a profitable herd.

The issuing of a certificate to a cow will tend to increase the care and feed given to her by the ordinary farmer. It must stimulate the work of cow-testing in general because the cows with certificates, and daughters of such cows, will be in demand, and farmers who have never had their cows tested will become interested and begin to join the cow-testing associations.

The work must be complementary to that of the cow-testing associations. The ordinary association has not the time to issue certificates to the eligible cows of its members, and, furthermore, it is felt that the certificate would mean more and have more value if issued under the supervision of the University of California.

Following are the rules and regulations under which it is proposed that the work be carried on. Changes may be required from time to time, but these regulations seem to provide the necessary machinery for meeting present requirements:

1. The work of collecting the records and issuing the certificates to be done by the University of California in co-operation with the various California cow-testing associations, nothing herein to be construed as maintaining that other methods may not also be approved.

2. The University of California to have absolute authority in questions as to eligibility of cows, authenticity of records, etc.

3. A fee of $1.00 to be paid upon application for entry of any cow, to cover cost of supervision, forms and certificates.

4. On completion of a 10-month record period the University of California will issue a certificate of record of production for cows that have qualified for the record.

1. The herd records as compiled by the various cow-testing associations are to be accepted as authentic and correct, but the University of California is to be the final judge in all questions that may arise.

2. Any certificate secured by fraud or misrepresentation to be cancelled if the evidence warrants.

3. The cow-tester or owner of cow to send in to University Farm, upon application, a detailed description of the cow, upon blanks to be supplied for this purpose by the University of California.

4. At each monthly test the tester or owner of the cow shall mail to the University Farm a report of the milk production and fat test of the cow for the testing day, on a blank form furnished by the University of California.

5. At the end of a lactation period of ten months a summary is to be sent to the University Farm on blanks provided for that purpose, of the production of the cow, which will be compared to the monthly reports already sent in.

1. Until January 1, 1922, cows may be eligible that are of either grade or "scrub" breeding. After January 1, 1922, only cows that have been sired by a registered pure-bred dairy bull will be accepted.

2. To qualify for a certificate, cows with first calf and under three years of age at time of freshening must produce in ten consecutive months a minimum of 300 pounds of butterfat.

3. Cows with second calf or more must produce a minimum of 350 pounds of butterfat in ten consecutive months.

4. In addition to the fat production, a cow to qualify for the certificate must carry a calf at least five months of the ten-month period.

5. Any cow that is known to have tuberculosis will not be able to qualify for a certificate.

6. To be allowed to continue on the test, any cow in normal condition must produce a minimum of thirty pounds of fat, for cows with first calves, and forty pounds of fat, for older cows, during the first month of the test.

7. The owner of cows to be entered shall agree not to use or dispose of their male offspring for breeding purposes.

Sudan Grass Finds Favor in Arizona

Sudan grass, now regarded as one of the standard crops of the South and Southwest, is meeting with increasing favor among Arizona ranchers. The Scotch Farms, south of Tucson, recently cut their Sudan grass for the second time this year. Just as soon as it is cut the grass is hauled, cut up and placed in a silo.

The first cutting and the one now being harvested yielded ten tons of ensilage per acre. Last year four cuttings were obtained on the Scotch Farms, the last cutting being a little lighter than the others. Owing to the dry year on the range and scarcity of feed, corn silage sold last year as high as $12 per ton. Under ordinary conditions it is worth $8 to $9.

While ensilage made from Sudan grass has not the food value of that made from corn or milo maize, containing the ear or head, it will, when fed with a small amount of grain or cotton seed cake, make an excellent feed for bulls, poor cows or weanling calves in winter.

A crop of Sudan grass can be grown with less water than corn. Many times a good crop of Sudan grass can be grown under conditions where corn or milo maize would not make a crop.

PRIDE OF PETALUMA

MODERN BROODING OF CHICKS

Requires strictly up-to-date and modern appliances. The latest model Pride of Petaluma Brooder Stove meets every requirement. It's safe, economical, efficient. Send for Catalogue No. 19.

Kresky Brooder Stove Factory
Petaluma Cal.

Two Weeks Left to Dispose of 150 M Ft. SOUND LUMBER at Remount Station

One mile east of Palo Alto
$15 M. and Up

20 M ft. 1x8, 10 and 12.
70 M ft. dimension lumber.
10,000 rolls the best ready roofing ever offered from this market, ½ price.
100,000 ft. 2x6 and 2x8 in 8-ft. lengths. 40 per cent saving.
300 po. 8x12, 2 to 6 ft.
670 po. 12x12, 2 to 6 ft. $12.00 M.
200 power poles 25 to 40 feet long, in ground one to two years, 50 % saving.
50 watering troughs, 1-3 original cost.
4 tons No. 6 and No. 8 insulated copper wire, ½ price. Limited quantity doors, screens and pipe. Time limit on this job soon expires. Get your list before too late.

At our S. F. stores, arriving this week:
3 cars bathtubs, sinks, toilets, lavatories; latest designs, at substantial savings.
20 large wardrobes, double doors, mirrors and hardware complete, $7.50 and $10.
200 5 light electric fixtures, globes, complete, $6; worth $15.
100 small fixtures, $1 to $3.50.

2 carloads mill goods, new and perfect, arriving this week.

SYMON BROS.
Block 11th and Market,
San Francisco.
21ST AND SAN PABLO, OAKLAND.

RABBITS $6,000 YEARLY. Raise Furbearing Rabbits for us in your back yard, spare time. We furnish stock and pay $3.50 to $7.50 each for all you raise. SUNSET FUR CO., 507 Lankershim Bldg., Los Angeles, Cal.

PAUL TAMARIX, NO. 957

The Great Toggenburg Buck is back in Los Angeles. He is famous as the producer of heavy milking daughters. He is richly bred, his pedigree speaks for itself. Sired by Chieftain 281 and his granddam out of Fannette and Bismarck. He is naturally hornless—is short-haired—vigorous. His kids give 4 and 5 quarts at first kidding and 6 quarts at second kidding. Service Fee, $10.00.
The "W" TOGGENBURG GOAT RANCH,
C. A. Ward, Prop.,
2131 Florence Ave, Huntington Park, Cal.

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WHEN YOU COME TO LOS ANGELES

to see what this great institution is doing to help people to a better understanding of their homes. It is really worth a trip to Los Angeles to see our Enlarged Better Homes Exhibit consisting of the Model "Better Home," the Colonial Home and the California Cottage, because they offer so many valuable and helpful home furnishing ideas.

Then there are many other remarkable and unique displays which are sure to please you—so don't fail to visit the House of Barker Bros., where a cordial welcome awaits you.

Next to visiting the store in person, is to take advantage of the splendid service our Mail Order Department offers to out-of-town folks. We're here to serve you and distance is no barrier to our methods of rendering efficient and satisfactory help. Why not try us out?

Barker Bros
ESTABLISHED 1880

732 South Broadway,
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Tire Trouble?

Practically all tire trouble is due to under-inflation.

Unless you maintain the air in your tires to the right pressure you cannot expect them to last.

Tires with not enough air in them not only wear out before their time, but they cause a tremendous waste of gasoline.

Cut down on your tire and gasoline bill by measuring the air in your tires with a

SCHRADER UNIVERSAL TIRE PRESSURE GAUGE

Price in U. S. $1.50

Ask your dealer to show you the SCHRADER UNIVERSAL PUMP CONNECTION also. It makes tire-pumping and tire-testing easy.

WE WANT

Green and Dried Fruits, Hay, Grain, Potatoes, Cheese, Butter, Eggs, Poultry, Wool, Beans, Honey, and other Farm Products. Let us handle your shipments. Quick sales, prompt remittances. Or will buy outright for spot cash. Express us samples.

W. C. PRICE & CO.

244 Clay Street, San Francisco.
Established Over 40 Years.

FISH Salmon in brine, 100 lbs., $11.00. Shipping weight, 165 pounds. Smoked Salmon, 20 lbs., $3.40. Dried Codfish, 10 lbs., $1.75. T. A. Beard, 4822 Winslow Place, Seattle, Wash.

Experiences With Elephant Grass

WHILE some purchasers of Napier Grass cuttings, upon making their first experiments, have met with failure or have been dissatisfied with their results, investigation usually shows that they have failed to meet the rather exacting requirements surrounding the starting of the plants. Among those who have had very pleasing results are the following, who have written to Eugene J. Spencer, pioneer grower of the grass:

Harry A. Lampert, Fillmore, Cal., ordered two dozen plants on the strength of the showing made by his first 12 cuttings, which showed green leaves above the ground almost immediately after planting. Charles W. Hayden of Redwood City, Cal., reported in sending a second order that he had secured excellent results with root-plants set out early in the spring, and had been feeding it, chopped fine, to rabbits and baby chicks. Therefore, it would seem that it has a place in the business of the "Little-lander" as well as the stockman.

Another pleased grower is Solon Bryan of San Diego, Cal. Mr. Bryan, who bought 100 joints on March 14, last, wrote on July 22 that he had counted 163 "suckers" on one plant, and was certain that they would average 100 to the plant, giving sufficient to set out a large acreage. He reported, furthermore, that in this short space of time his plants had attained a height of 7½ to 8 feet.

M. F. Fiske of San Jose, Cal., who purchased 40 rooted plants August 19, had unusual success with summer planting. He reported that one of the plants grew 5 inches in 6 days and that several had produced 10 or 12 sprouts in two weeks.

It would appear, from the foregoing, that the novice who gives close attention to the directions for planting Napier Fodder cuttings or plants can be sure of success, even at less favorable seasons than the present. September, according to those who have had the most experience with the plants, is the very best month to plant in most sections of California and the Southwest.

For the "Little Lander"

A Southern California "Little-lander's" experience with Napier fodder will be of interest especially to goat and chicken fanciers. Mrs. N. M. Jackson of Los Angeles writes to Orchard and Farm as follows:

"We have found that chickens, ducks and turkeys, as well as all kinds of stock, like elephant grass. It is greatly relished by our goats. Our Nubians are in fine condition; their coats shine like black satin. We have more than 20 head, and this summer they have been fed principally from small plots of Napier fodder aggregating 35x165 feet. We set out rooted plants last April between fruit trees and in odd corners. It was ready to be cut for feed by June and we have been feeding it regularly ever since. We cut it back within four inches of the ground every two weeks. It usually grows 20 inches between cuttings. It seems to thrive in different types of soil and will do very well without much water, although yielding more if well irrigated. The best way to make a start is to plant rooted cuttings in the fall before cool weather."

The Beet Farmer and the Tractor

THE tractor has long been associated with sugar-beet growing in this State. The big Fowler engines used by the sugar companies and operated in pairs, one at each side of the field, were a familiar sight in early days. Some of these are still operating.

The tractor is favored by sugar-beet growers because their soil types are usually inclined to be rather heavy, and the work of cultivating makes large demands upon power. Sugar-beet growing requires constant care and attention to detail, and the tractor has been found to provide power when needed, especially in the spring rush, and again at the time of lifting the crop and delivering it to the factory. Getting the soil work done on time and delivering a bulky crop when the factory calls for the beets are two important considerations.

The tractor has found a favorable reception from the growers who are in a position to utilize the power which it can supply, a position which is justified from the standpoints of economy, concentration of power, constant need for power, and multiplicity of detail work that can be done by tractors.

The tractor must, of course, be studied from the standpoint of the needs of the individual farm, but that the increasing use of tractors in beet-farming is bound to come is apparent.—Prof. R. L. Adams, University Farm, Davis.

Free Course in Tractioneering

ONE DOLLAR, the enrollment fee, is the only expense in connection with the gas tractor course to be given at the University of California Farm, Davis, from September 16 to 25. The enrollment is to be limited to 180 students.

Lecture-demonstrations will be given on subjects such as gas engine principles and types, fuels and carburetors, carburetor adjustment, ignition, high and low tension systems, magnetos, governing and cooling mechanism, lubrication, testing of horse-power rating, tractor types (adaptability and construction), tractor motors, tractor operation, valve timing, and adjustment of parts and engine trouble.

Practice work will consist in actual operation of twelve makes of tractors with soldering, babbitting, pipe-fitting, forge practice, clutch-adjusting, ignition timing, carburetor adjustment and "trouble-shooting."

Similar courses at Davis in 1916, 1917 and 1918 enrolled 442 students. Enrollment blanks and descriptive pamphlets will be sent upon application to the Dean, University of California Farm, Davis.

Trained Operators Available

Employers desiring the services of tractor operators may get in touch with former service men who have completed the University of California's tractor courses given at the University Farm, Davis, under the supervision of six teachers giving instruction with thirteen tractors in the operation and repairing of gas tractors, by writing to the Agricultural Engineering Division, University of California Farm, Davis.

Fifty-five ex-service men studied the tractor course during June. About ten are taking the advanced work, and will be recommended to prospective employers.

CHAS. H. HECKE

formerly Horticultural Commissioner — now Director of the State Department of Agriculture. Known for breadth of mind and shoulders and liked for firmness of convictions and tread. He is with and for you, and believes in co-operation and the divine rights of farmers.

Eugene J. Spencer

And a two-year-old bunch of Napier (Elephant) Grass, grown from one joint.

GET A START WITH THIS WONDERFUL GRASS NOW! SEPTEMBER IS THE VERY BEST MONTH TO PLANT. (Plant during September, but not later.)

PRICE OF JOINTS: $1 per doz.; $5 per 100; $15 per 500, or $25 per 1000.

Can also furnish large, strong, "Rooted Plants" at $1 per dozen, $5 per 100, or $40 per 1000. (These grow quicker on account of having roots.)

Address Eugene J. Spencer,
610 East 54th St., Los Angeles, Cal.

ELEPHANT GRASS

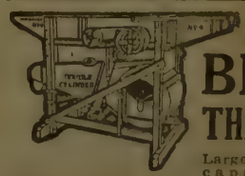
(Napier Fodder)

CANES FOR FALL PLANTING

by simple method of sugar cane propagation. 1000 joints, $25; 500 joints, $15; 100 joints at $5, smallest order filled.

H. L. Wagner

Descanso, San Diego Co., Cal.



BEAN THRESHERS

Largest cleaning capacity of any thresher made and requires less help to operate. Pays for itself in one season. Hardwood construction throughout. Won't split the seed. Double cylinder. Made in six sizes—largest to smallest. WRITE FOR CATALOG.

California Implement Co.

122-124 N. Los Angeles St., Los Angeles.

CORN HARVESTER. One man, one horse, one row, self-gathering; equal to a corn binder; sold direct to farmers for 23 years. Only $25, with fodder binder, shipped by express to every State. Free Catalogue showing pictures of Harvester. CORN HARVESTER CO., Salina, Kas.

PATRIOT

Farm Motor Trucks

War demanded simplicity and standardization in truck manufacture, in order to secure certainty of operation.

That is just what the farmer needs; he must have certainty of operation without depending upon service stations.

All of war's lessons were utilized by the Hebb Motors Company in perfecting the Patriot Truck.

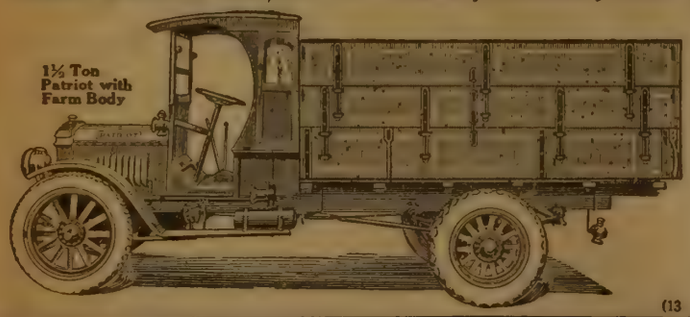
The Patriot Truck has made the driver his own "service station," for there is nothing about it likely to need adjustment but what the average farmer's boy or hired man can readily master.

Built for Country Roads — Built for Farm Loads

Investigations by the United States Department of Agriculture prove that Motor Trucks cut the cost of hauling grain from 33 cents per ton per mile to 15c per ton per mile. This is the reason wide-awake farmers everywhere are adopting trucks.

Write for information as to what a Patriot will save you.

Hebb Motors Co. 1371P Street, Lincoln, Neb.



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A WADE does 10 mens work Saws 25 cords a day!

A money-maker and hard work saver for land clearers and wood-cutting contractors. One man can move it from cut to cut. Simple and reliable. Hundreds in use all over the U. S. When not in use for wood cutting, the 4 H. P. motor will run mills, feed mills, feed cutters, pumps, etc.

"My Wade saw is cutting wood for less than 3 cents a cord."—F. J. Williams, Burns, Ore.

"I have sawed through five-foot solid oak logs as the rate of one foot a minute."—N. P. Myers, Lassen, Calif.

Quick deliveries from over 100 points throughout the United States.

America must burn more wood for fuel. One Wade will do 10 men's work at one-tenth the cost. Write for free Book, "How Dan Ross cuts 40 cords a day," full details and special price.

R. M. WADE & CO. SINCE 1865
345 Hawthorne Ave., Portland, Ore.

PUT THIS DOWN IN YOUR NOTE BOOK:
"Pacific new and re-newed pipe saves me money."
Renewed screw casing costs from one-half to two-thirds less than standard pipe. Large savings on standard pipe, fittings and valves; special fittings made to order. Pacific Pipe is thoroughly tested and guaranteed for 150 pounds working pressure; asphaltum dipped; serves every purpose. Let us save you money. Write!

PACIFIC PIPE CO. 228 MAIN ST. SAN FRANCISCO

"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Write Orchard and Farm for details.

Mystery of Granite Mountain

(Continued From Page 5)

that was apparent in her flaming cheeks.

"It is," he cried. "It's the girl of the picture!"

There was the sound of a sudden scuffle from the other room. With his guard fairly dragging on his neck, swinging his arms furiously, the younger Graves, white-lipped and defiant, struggled and fought his way into the room.

Quickly caught and held by two of the men who sprang to the assistance of the panting deputy, Fred faced with flaming eyes the surprised Sheriff, who had seized his revolver and prepared to prevent any possible escape through the door.

"Benson, you keep your hands off of her, damn you, or I'll——"

The young woman sprang forward and peered at the face of the captive. "Fred," she cried and rushing to him, flung her arms around his neck, sobbing convulsively. The officers released his arms and fell back. He held the weeping girl close to him and caressed her head, reassuring her in a low voice. Then he drew her gently with him back into the room where his brother was still sitting, and silently, his arms still about her, resumed the position in which the guard at first had placed him.

"Huh," mused the Sheriff, mopping his brow. "This IS gettin' interestin'. Looks like we was goin' t' have a pretty profitable night, after all. I don't want t' start back, however, 'til th' ol' prospector returns. Reckon he'll be showin' up soon."

"You won't have to wait very long," came a new voice from the door. Every occupant of the room wheeled quickly. The grizzled giant stepped across the threshold, but he presented a different appearance than when he had so quietly slipped away during the night. His face looked haggard in the early-morning half-light; his clothes were torn; his shirt almost ripped from his back. And once more he held his hands high above his head. For behind him, poking his back with a suggestive iron muzzle, came Mart.

Chapter VIII

For a full half minute not a word was said. The Sheriff was the first to get his bearings.

"Who-wha-what's this mean? Where did you come from, Mart? Why are you a' holdin' Dunning, there? We was just waitin'——"

"Yes, and you would have waited a long while, Benson," replied Mart, without removing his revolver from the ribs of his captive. "Dunning, eh? Ha-ha, that's funny. So you're travelin' under the name of Dunning now, are you, Red?" Then his lips tightened and still holding the self-styled prospector against the wall at the point of his gun, he looked squarely into the eyes of the Sheriff.

"Benson, have I ever told you a lie? Have I ever done any work fer you where I failed? Will you take my word now fer facts thet I kin prove in a very short time?"

The Sheriff flushed slightly and dropped his eyes for a moment. "Why-a—no, Mart, I ain't never had no reason to doubt yer word. If you have somethin' up yer sleeve, better let us have it."

He spoke hesitatingly; stopped and cleared his throat. "I'll accept as facts anything that ye'll—that ye kin prove later. Now, what?"

"Put th' bracelets on this man," demanded Mart, instantly. The Sheriff hesitated; started to protest. "He's one of th' worst criminals in this Western country, I tell you," asserted Mart. "Remember, I kin prove it. Put th' bracelets on him, quick, Benson."

The big prisoner started to address the Sheriff, stepping slightly away from his captor. Mart jabbed him severely with his gun and ordered him, in fear of his life, to be quiet. Without another word, Benson stepped forward and snapped heavy handcuffs upon the wrists of the prisoner. He could not, however, fail to show some irritation at the turn things had taken. In fact, he scarcely knew why he had so blindly obeyed Mart's suggestions.

"Seems to me yer runnin' a kind of high-handed game, here," he growled. "Better tell us yer story, quick. I've got three prisoners in th' other room thet we've got to take back t' town."

"The Graves boys—and who else?" demanded Mart. "Now, don't get sore, Sheriff, I know what I'm about."

"A girl," replied Benson, stiffly. "We caught her sneakin' around th' cabin and later found that she was the one we've been lookin' for."

Mart frowned and drew in his breath sharply. "So you got her, too, did you? Bring 'em all out here, please, Benson."

Still displaying extreme annoyance, but apparently anxious to finish as quickly as possible this humiliating ordeal, Benson opened the door into the adjoining room and called: "Bring 'em all in here, boys."

The two guards ushered in Enos and Fred, the latter holding the hand of the young woman. She had no sooner caught sight of Mart than her face broke into a smile, clearly indicating pleasure and relief. No apparent change of expression crossed the faces of the brothers.

"No need o' coverin' them any longer, Benson," said Mart. "Better have two of the boys instead of only one, watch that red-bearded scoundrel over there."

The Sheriff's impatience broke bounds. "Damn it, Mart, this has gone far enough. Do you suppose I'm goin' to let you make a fool out o' me any longer? Here, boys, round up the whole gang and we'll start back to town. I've had enough of this monkey-work."

"Wait a minute," said Mart. Something in his voice stayed the movements of all, including the Sheriff. "Benson, if you don't let me finish what I have started here, you will make yourself out a bigger fool than you imagine I am makin' out of you, and I'm tellin' you straight, before I get through, you'll thank me for what I've done. Remember, you agreed to my proposition. I ain't never told you a lie. You ain't never broke no agreement that I know of. Are you a'goin' t' commence now?"

Benson turned; laid down his hat; thought deeply for a moment; then lighted a cigar and sat down quietly in a chair. "Go ahead," was his answer. "Never mind th' boys and th' girl," he said to his men. "Watch th' prospector." Then, folding his arms, raising his feet to a box, and settling back as though about to enjoy a play, he waved his arm grandiloquently. "We will now enjoy that snappy little drama, entitled, 'Out sheriffin' the Sheriff,'" he said, "an Mart will take th' leadin' role."

But the Sheriff's sarcasm was more pointed than he realized. Mart was indeed, the leading actor. He occupied the center of an absorbed circle. Released from the close supervision

of their guards, the brothers and the young woman drew up a bench and with the others awaited attentively his next words.

Chapter IX

"It won't take long t' clear up this affair," began Mart in his direct manner. "In th' first place, I'll say in regard t' Red-beard there, thet I have knowed him fer a long time, jest as I have knowed th' Graves boys an' th' young lady you captured so boldly in th' night. She is Gladys Stewart and she's from Texas, which is where me an' Fred and Enos there, all originated. This scoundrel done th' Stewarts outa some property an' then hiked up here, growed this fine beard fer a disguise, an' tuk up prospectin' fer a fence, so as t' live out here alone, where he thought none of his old acquaintances 'd locate him. But Fred and Enos, who had knowed th' Stewarts all their lives, vowed t' find him an' recover their property. They trailed him t' this country.

"It seems they spied on him at different times fer a while without his knowin' they were here, but a few weeks ago he heard their names. It was Red's knowledge that they was hot on his trail and maybe close to some evidence, that led up to an event I am now goin' to relate.

"This may surprise ye some, too, Benson. But I can prove what I am goin' to say, and by all that's holy, I'm goin' to see justice done. Benson, you have been workin' on th' wrong tack and I'm goin' t' set ye right. Fred and Enos Graves, whose tracks we found in th' sand at th' foot of Granite Mountain, DID NOT SHOOT EACH OTHER!"

Intent upon watching the effect upon the Sheriff of these words, Mart, as well as the others in fact, had entirely forgotten one vitally interested member of the party. He was therefore caught off his guard when a piercing scream from Gladys Stewart and a cry of "Look out!" from Enos, caused him to turn and dodge quickly.

So suddenly that the entire party was taken off its guard, the subject of Mart's recital, suddenly raising his heavily-manacled hands for a crushing blow, had rushed at the speaker, before his guards could clutch him. Only the girl's scream, which caused Mart to dodge quickly, saved him from serious injury. A well-directed blow from Enos, however, quickly put an end to the Giant's headlong rush, and he was finally dragged, cursing and kicking, into the adjoining room.

Chapter X

"Good gracious," said Gladys in a shaky voice, venturing forth from behind the watchful Fred, where she had taken refuge, "if we all get out of this mess alive, I'll never do any more detective work, nor wish for any more adventure. Whew!" And she sat down limply in her place, as Mart calmly prepared to resume his story.

"Do you know why he tried to get me then, Benson?" cried Mart. "Do you understand why that scoundrel made that sudden jump? Well, I'll tell you; he is the man who shot Enos and Fred. And he tried to kill 'em both, because he was afraid they would land him behind the bars, where he knew he belonged. He saw th' truth comin' out. That's the reason he was so scared!"

Benson no longer smoked nonchalantly. Not alone confusion, but also painful embarrassment showed in his florid countenance. "But—but—the evidence," he faltered. "It looked like a duel; it must have been a duel."

"No," answered Mart emphatically. "He shot them. And he did it f'm ambush. Hid up there on the hillside, he was, th' dirty skunk, behind a boulder where they couldn't touch him at

(Continued on Page 36)

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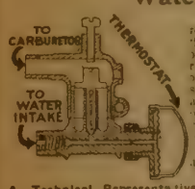

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The Big Tractor Demonstration

(Continued From Page 15)

known nationally of the light-weight tractors.

The "Wheat" tractor, a comparativey new arrival in the California field, will be shown by the Coast distributors, the Hession Sales Company. An interesting feature of their exhibit is expected to arrive overland just prior to the show. A standard-type "Wheat," equipped with rubber tired road wheels, which may be secured as regular equipment, is on its way across the continent, drawing a trailer, carrying beds and supplies for its crew, as well as a plow and traction wheels. The trip of this machine from the Atlantic to the Pacific has attracted nation-wide attention.

The Yuba "Ball Tread" will be shown by the local agents, A. F. George & Co., who will also exhibit a full line of John Deere implements. They expect also to demonstrate the belt-power possibilities of the "Yuba" in conjunction with the exhibition of their lines of power machinery.

The "Allwork" tractor, a product of the Electric Wheel Company, will be shown for the first time by Leigh M. Railsback, California representative.

Interesting Local Products

One very interesting exhibit, a local product, will be that of the Community Manufacturing Company, of Los Angeles, the "Allen Water-Ballast" tractor, which features the use of removable tanks in the drive wheels, which may be filled or drained, in order to increase traction or reduce weight, according to the work being done.

The "La Crosse" tractor, every owner of which, according to the manufacturers, is a "happy farmer," will be shown by the Knapp Tractor and Machinery Company in two sizes, including a new "baby" orchard machine. A full line of tractor implements also will be shown.

Smith Brothers will make an extensive exhibit of the Cleveland, now known as the "Cletrac" Tank-type. Hundreds of these little machines are now in use throughout the Pacific West.

The "Beanpull" orchard tractor is entered by the Bean Spray Pump Company, who will also demonstrate their other lines, including orchard and field sprayers and pumps, and will operate pumps by means of the tractors.

Another local product is the tractor manufactured by the Union Tool Company of Torrance, known as the "Suregrip," a tracklaying-type machine which made a very good showing at last year's demonstrations, and will be exhibited with a number of improvements.

The California Moline Plow Company has entered the Moline "Universal," with a complete line of Moline implements. The Moline tractor is a two-wheel machine, which may be used for cultivation and, the manufacturers claim, practically every operation ordinarily performed with animal power. To bring out the versatility of their machine, the Moline Company will have on hand a special grain drill, corn binder, power lift disc harrow, power lift gang plow (both disc and mouldboard) and a tractor-mower.

Another Local "Celebrity"

Product of a California factory, and well known throughout the State, the Fageol "walking" tractor, with improvements resulting from a year's development, will again be exhibited. Because of its peculiar traction feature (pointed prongs on the drive wheels), this little machine has attracted much comment, and is now making good upon many Western (and Eastern) ranches.

The "old line" Sandusky, one of the best known of the older makes of tractors, and product of the Dauch Manufacturing Company, will be shown in two sizes by Washburn Brothers. The 10-20 Model J and the 13-35 Model E will be demonstrated.

The accessory tent, in addition to housing exhibits of tractor and engine accessories, such as spark plugs, piston rings, carburetors, oils and greases, will accommodate a number of interesting motor truck exhibits.

The Twin City tractor will be exhibited for the first time by Frank O. Renstrom, a new member of the Association.

The International Line is now handled by Spencer & Haugh, successors to Dixon & Griswold.

The demonstration field can be reached via Pacific Electric Railway, either the Gardner Junction or Sherman line, and by several boulevards. There will be "something doing" every day from 8 a. m. to 5 p. m., and lunch will be served on the field at city prices. Ample parking accommodations will be furnished free, and there will be no admission charge.

Remember the place and date, Rancho La Brea (Melrose and Crescent avenues), Los Angeles, September 16 to 21. "More power to you!"

Experiments With New Forage Plants

Recognizing the increasing importance of forage plants in the program of "more and better livestock" which is engaging the attention of the entire nation, H. L. Musser of Los Angeles, who has long interested himself in this subject, has conducted this summer some very interesting experiments with new and old fodder and pasture plants. His demonstration plot at Los Angeles has been visited by hundreds of interested stockmen and ranchers.

Orchard and Farm realizes the importance of this forage plant question, both to the range stockman and the breeder, and takes pleasure in announcing for the October issue a very comprehensive article, dealing with the discoveries of Mr. Musser and other experimenters, and illustrated with photographs of some of the plants that bid fair to become standard California crops. Watch for this feature next month!

Stage Set for the State Fair

(Continued From Page 6)

confusion will be practically eliminated.

Among the scores of exhibits that will be of particular interest to women is the Baby Hygiene booth, which has been placed under the control of the State Board of Health, and which, it is promised, will be even more helpful and interesting than last year.

The Association has not overlooked the amusements, although it is planned to emphasize the more serious and educational side of the big show. Visitors will not lack excitement, for in addition to the races, there will be a Wild-West carnival, staged under the direction of Bob Anderson, and including bucking contests, and the usual rodeo features. Such famous pitching horses as "Motion Pictures," "Grass Valley" and "Long Tom" will furnish plenty of thrills for the crowds.

With ideal weather conditions forecast, the comfort of the visitors seems assured. In order, however, to obviate dust and inconvenience, the Fair Association has caused the walks and roadways to be covered with crushed stone. With the grounds all "washed and ironed," buildings decorated, lawns trimmed and exhibits in place, the State Fair of 1919 promises everything worth while and entertaining, as well as a scope and dignity befitting a great horticultural and livestock producing State.

The Magnificent New Building

Which will house permanent exhibits of California products and thus become a lasting monument to her resources.

The Southern California Fair

THE Southern California Fair, which will be held at Riverside, October 7 to 11, promises to surpass any of the previous meetings of this association in its seven years of successful experience. Preparations are being made to double the present capacity of hog and cattle pens and some wonderful herds will be shown. Purebred dairy stock in Southern California counties has been increased in the past few months by a number of important shipments from the East and the best specimens of this new stuff will be shown. In the swine department Duroc-Jerseys seem to lead, with Poland Chinas closely following. Berkshires and Hampshires, however, will be shown in larger variety and numbers than ever before.

The best livestock judges obtainable are being secured to act at this show. In addition, some of the best livestock specialists in the West will be present, and daily demonstrations in breeding and handling will be conducted. It is the intention of the management of this fair to measure up to the educational standard of modern agriculture and livestock exhibits. There are numerous new breeders in Southern California who are eagerly looking for information in better methods of handling breeding and agricultural problems and they will be able to secure this information at the Southern California Fair.

A very successful goat show was held at Riverside last year, but the show this fall promises to include more than double the number of entries. The goat buildings will be greatly enlarged and the best equipment possible will be arranged for the comfort of the prize lots.

Very liberal prizes have been offered by the association this year for county exhibits, and these offers exclude Riverside County as an exhibitor. Communities from other counties may also compete for the ten very liberal community prizes. This is considered so free and inviting that a number of the counties of the southern part of the State are preparing wonderful exhibits. For this reason the association is very largely increasing its general exhibit quarters.

San Diego Fair

At Balboa Park, San Diego, September 24-27, will be held what promises to be one of the most comprehensive of this year's "community fairs." It will be conducted under the jurisdiction of the San Diego County Farm Bureau, and the prizes will be limited to local entries, although outside exhibitors will be welcomed. W. E. Mellinger, Chamber of Commerce Building, San Diego, is Secretary.

Pointers on Power Plowing

(Continued From Page 22)

to have the first furrows as nearly straight as possible.

A little extra time taken in measuring off the necessary distances and setting plenty of stakes for guidance will nearly always be more than returned in saving time at the finish. If the tractor pulls three or more plows, cutting a total width of 3 or more feet, some effort should be made to have the width of the headlands an exact multiple of the total width of the plow, so that the last strip across the field will exactly cut out the land or finish it to the fence. This will do away with the necessity of making a trip across the field, probably over the plowed ground, to turn a narrow strip which has been left unplowed.

When methods are used in which the plow is left in the ground continuously the outfit is started in the center of the field. For the first three or four rounds the plows are lifted at the ends of the furrows, and then they are left in the ground when the turns are made. The outfit is then run around the field until the entire area has been plowed, and if the field has been measured correctly before the tractor started, the last round will plow the land next to the fence on all sides.

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DISSTON SAWS AND TOOLS Standard for Nearly Eighty Years—and Growing Faster Every Year

Mystery of Granite Mountain

(Continued From Page 33)

200 yards with their revolvers. And him with a Winchester! Is he a lyin', murderous hyena, Benson? Is he, or are ye still so bull-headed you won't admit ye are wrong?"

"But what evidence—you said you could prove it," mumbled the Sheriff weakly.

"Wait a minute. Here, Jack, hand me th' man's belt there, in the corner. What kind of cartridges is in it? Is them revolver cartridges? No! They're forty-five seventies. Is they any other man in these here parts thet has an old forty-five seventy repeater? Now look at these." He took from his pocket a paper parcel, unrolled it, and produced a handful of empty cartridges. Comparison showed them to be the same as those in the belt. "I picked 'em up on th' mountain-side, where he pumped 'em out of his gun," asserted Mart. "I cached 'em under a tree until last night, when I dug 'em up on th' way over here. But that ain't all. I wasn't satisfied with that, though I knowed who did it and th' Graves boys knowed who did it. But I wanted more evidence. I found it behind th' boulder where he rested his rifle." He produced a button of peculiar shape and color. Examination showed its mates to be upon the prisoner's vest. Mart made a dramatic gesture. "Are you satisfied, Benson, that we can make a case?"

The Sheriff's face was now a study. No longer striving to save his dignity, and desiring only to learn the whole truth as quickly as possible, he revolved quickly in his mind all of the circumstances which had led up to this discomfiting climax.

"All right, Mart, all right," he began. "But the hold-up, here. Why were the boys stickin' him up at th' point of a gun when we found 'em. Why did they——"

The tense voice of the elder Graves broke in. "I tried to tell you, Benson, but you had us dead to rights and you wouldn't listen. We were trying to make the man tell us where he had hidden the fake deeds to the property he stole." Impulsively, he stretched out his hand to Mart. "I want to thank you, old man," he said. "We knew who did the dirty work from ambush on the mountain-side, but we had not gathered the evidence to prove it. You have done that for us."

Chapter XI

"I forgot t' tell you, boys," said Mart, looking knowingly at Gladys, who was watching him with expectation. "Gladys and me located the deeds day before yesterday, where he had hid 'em in a cave near here. I went over to Sandhills lookin' fer you boys t' tell you about it. Then when I stopped at Benson's office and got wind th' Gladys might be in trouble, I plumb fergot it, what with tellin' you about th' new developments and all of us tearin' over here.

"But I guess Gladys didn't need our help so much after all. She seems t' be pretty well able t' take care of herself, eh, Jennings?" And he poked the embarrassed Summit officer in the ribs.

"Yes," admitted that gentleman, sheepishly, "she gave us the slip all right. But, tell us, Miss, how did you happen to be up here?"

"Why, I came all the way from Texas, in response to a telegram from Mart, after the boys were hurt, and met Mart at Summit. He told me the boys were out of danger and wanted me to stay out of sight until they were able to be about. He also told me how they had refused to talk in order to save me the humiliation of being dragged into the affair while they were still helpless. Working quietly with Mart, and keeping myself pretty well concealed, I managed to stay in the vicinity of Summit for several weeks without arousing any suspicion. In the meantime, Mart and I had gathered together the ends of the threads of evidence against this man, and finally even located his hiding place, where he had stored not only the papers we were after, but also a forging outfit, and a partly-assembled counterfeiting machine.

"Then yesterday I became aware that I was being watched, and knowing something was up, slipped off into the woods, gradually working my way towards this cabin in the hope of meeting Mart. I saw the horses tied below, and thought Mart must be here, so was creeping up to look into the window when your man sprang out and grasped my arm. You know the rest."

She laid her head gently against the shoulder of the younger Graves and looked up at him trustingly. "But now I'm very, very tired," she said. "At last this awful tangle is straightened out, and I can rest—and be happy—with Fred."

The affection displayed on Enos' face as he looked at his younger brother and the sweet-faced girl brought the Sheriff to his feet.

"Boys, I'm plum flabbergasted," he said. "I kin honestly say thet I'm mighty glad t' see this here party turnin' int' a thanksgivin' service instead of a general jailin' bee. I reckon I got off on th' wrong tack, an' I'm willin' t' admit it. But say——" and he placed his hand upon Enos' shoulder. "There's one thing I don't understand. You don't seem t' be very jealous of yer brother."

"Jealous," replied Enos, puzzled. "Why should I be?"

"Why, the pictures! When we toted you boys int' th' doctor's office, ye each carried a picture of this same girl."

Suddenly Gladys burst into a peal of laughter, in which she was joined by the brothers and Mart.

"You see, Mr. Benson," she said, almost choking with mirth, and watching with twinkling eyes the expectant grins upon the faces of her three Texas friends. "You see, Sheriff, Rosa, my sister, is engaged to Enos, and Rosa and I are twins."

Experiment in Raising Rye

R. F. Jacoby, who experimented near Byron this year with rye, planting some seven acres, reports the harvesting of 72 sacks. Eastern seed, secured at a cost of $4 a sack was used. Mr. Jacoby is satisfied that the Byron section is well adapted to rye culture, and but for the lack of rain in April and May believes he would have secured a yield of 15 to 20 sacks. Next year he will sow thirty acres to this grain. Barley in the same field went 10 sacks. The great difference in the price of the two grains has convinced Mr. Jacoby that he has discovered a splendid producing crop, with even limited rainfall.

Burbank—Plums

(Continued From Page 4)

the Southern States, particularly the more eastern Gulf States. It is a good, healthy tree with rather narrow, pointed leaves, but not being as hardy and adaptable as the "Burbank" it is best suited to the more temperate or semi-tropical climates, though it thrives well in some parts of New England.

The fruit usually averages from two to two and one-fourth inches in diameter, and is almost globular. The skin is a dark red, covered with a

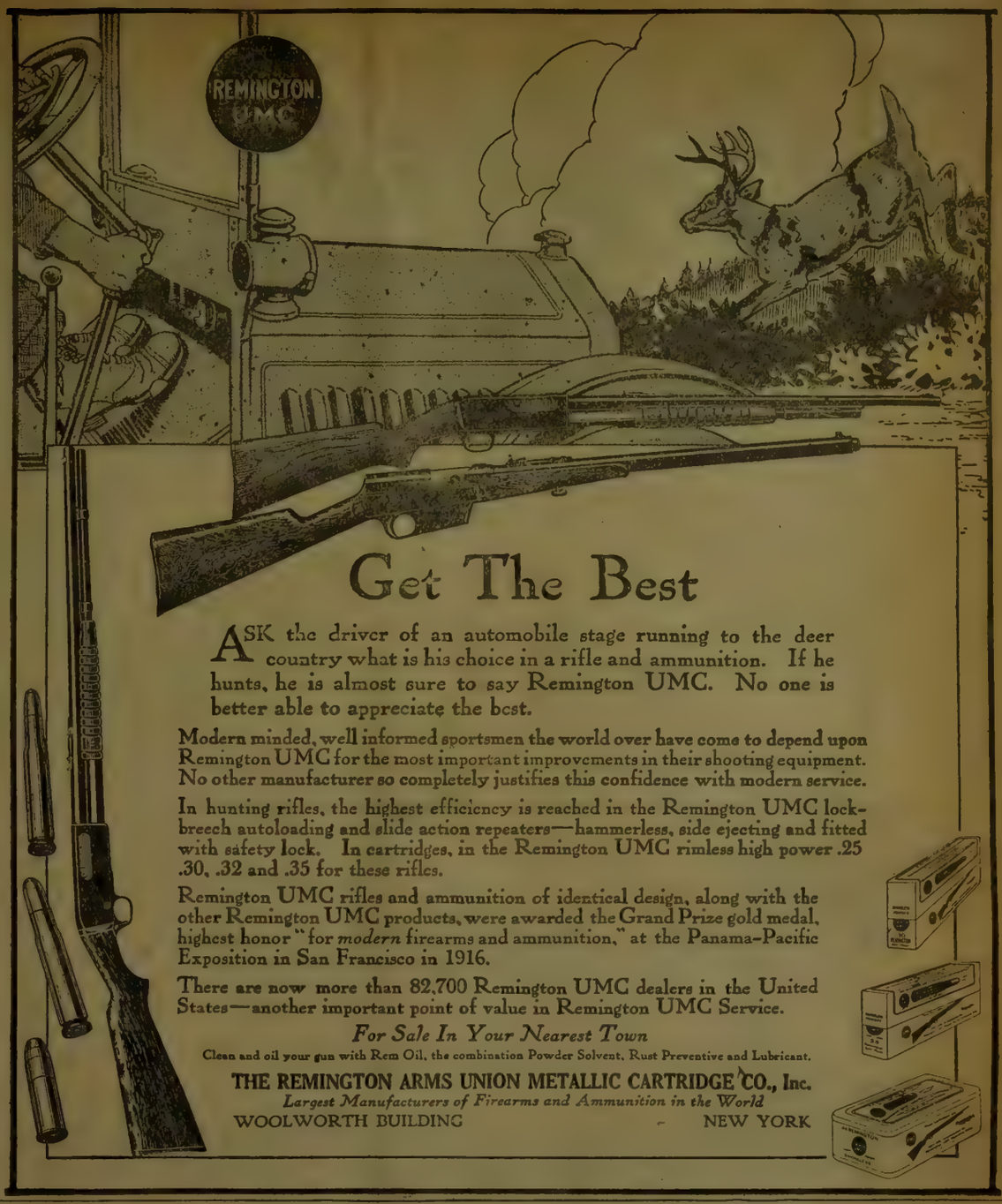
The Satsuma

One of the standard varieties in California. This plum is especially popular in the South, but is successfully grown in parts of New England. It is regarded as one of the best sellers and is highly esteemed for its flavor.

thick, pale bloom, and rather conspicuously and abundantly dotted with small, yellow specks. The flesh is a dark purplish-red, firm, and of good quality when fully ripe. It is highly esteemed for jellies and jams, as well as for the table when fresh.

The "Burbank" plum was, in my judgment, the best among this lot of twelve seedlings, and the best of all Japanese plums then known; and time has abundantly shown my judgment to be correct. It is unquestionably the best Japanese plum that has ever been introduced into America. Today it is one of the standard shipping plums, and none has ever been so widely cultivated, and found to flourish under so many varying conditions; in fact, it is a favorite in every civilized country where plums can be raised. The trees are strong, healthy, free from mildew and plum-rot, and extremely hardy, though

(Continued on Page 40)



Get The Best

ASK the driver of an automobile stage running to the deer country what is his choice in a rifle and ammunition. If he hunts, he is almost sure to say Remington UMC. No one is better able to appreciate the best.

Modern minded, well informed sportsmen the world over have come to depend upon Remington UMC for the most important improvements in their shooting equipment. No other manufacturer so completely justifies this confidence with modern service.

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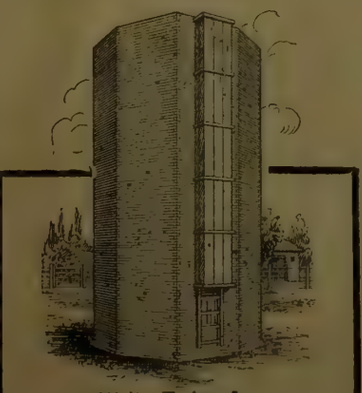

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The Boss: "What's the matter? You look as though you had been in a cyclone!"

His Nibs: "I was trimming the hind feet of my mules, as the foreman told me to, when suddenly there came an earthquake or a tornado or something and when I regained consciousness I found I had been thrown clear through the barn-door into the gravel-pit. You certainly have some freakish weather out here!"

A Sane and Simple Solution

"Speaking of capacity," said honest Farmer Gray.
"The more good hay I feed these beasts, the more they put away.
Talk about alfalfa mills! I've fed 'em ton on ton,
And when I think my work is through, I find it's just begun!
My arms are sore; my purse is flat; it's tough, as you'll allow."
He solved his problem, though, at that—he owns a tractor now!

Mussed Him Up

A well-dressed young fellow from Napa
While in Frisco attempted to slapa
Waitress, who said
He had wheels in his head—
And now he does not look so dappa!

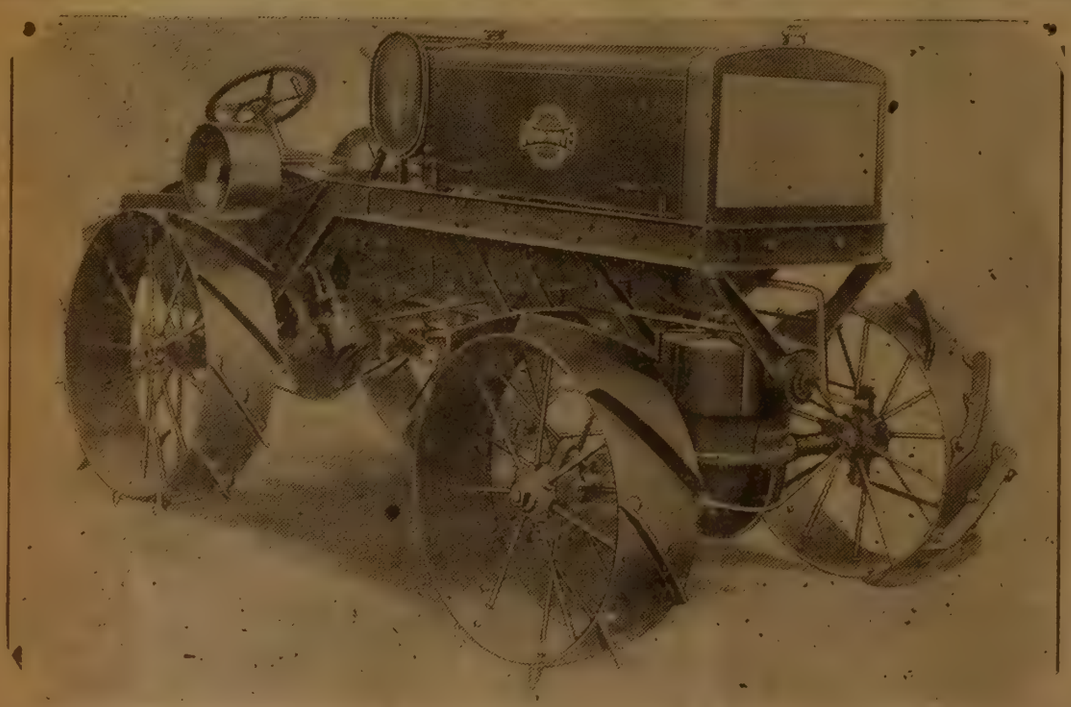
Clever Strategy

A farmer, whose watermelon patch had been the object of several raids by passing motorists, secured immunity by posting the following sign conspicuously near the roadside: "WARNING: Six of these melons are shot full of strychnine and nobody but me knows which ones they are!"

With the Farm Adviser

Polite Caller: "I would like to get as soon as possible some concise information on the growing of asparagus."

Stenographer (formerly a hasher) calling in stentorian tones to Adviser in rear office: "One order of boiled-down asparagus tips. Rush it!"



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Dec. 1-13 ..... Cheesemaking
Dec. 8-20 ..... Deciduous Fruits (Especial emphasis on Pruning.)

Catalog and details, including entrance requirements, may be obtained from the Director, Agricultural Experiment Station, Berkeley, Cal.

Garden of Flowers

(Continued From Page 25)

objections and keep them in the house all winter. They are so easily grown that every one should have a plant or two. I have started dozens from cuttings, and a few with seeds.

It is best, however, to start them with cuttings. Take the cuttings from a small branch, or stem, near a joint. Let the cutting stay in water, changed daily, until it sends out a large number of rootlets. Then plant it in a pot, setting where it will have ample sunshine. Handled in this way, the little plant keeps right on growing after it is set out into the soil. I have found that leaf mold is the best soil of all in which to grow the coleus, but have grown them successfully in sandy loam. The coleus needs a great deal of water and an abundance of sunshine to make it really beautiful. The sunshine brings out all of the bright colors. Pinch out the flowers if you wish to make the coleus continually send out new leaves. Start them in September and you will have sturdy little plants at Christmas time. Then, too, they make such pleasing holiday gifts.

Plant Sweet Peas Now

Where the winters are not too severe, sweet peas should be planted in September if you want the earliest flowers. I would not advise any one living in a locality where the frosts are very heavy throughout the winter to plant sweet peas now, but those who live in the semi-tropical and coast divisions can safely plant them in September. California produces more sweet peas than any other State, but this year there seems to be a shortage of seed. If you expect to plant a certain variety I would advise that you obtain your seed as soon as possible.

Work your soil rather deep for sweet peas. If the soil in which you expect to plant them has been used before, especially for peas of any kind, thoroughly work a liberal amount of barnyard manure into it. In heavy soils, lime and sand should be added also.

Recently I asked a seed man about the varieties of sweet peas. He said: "There are fifty-seven varieties, from big, wavy-petaled, orchid-flowered types down to the common little sweet peas that grow anywhere." I will not attempt to name those fifty-seven varieties, if there are that many. Your dealer will probably offer the proper variety for your locality and purposes.

Other September Suggestions

Shasta daisies, forget-me-nots, hollyhock, cineraria, carnations, stocks, primula, campanula and pansies may all be planted in September.

Shasta daisies make lovely borders for walks and are not difficult to grow. I have seen them grown in different soils, but those which are produced in the heavier types of soil, mixed thoroughly with well-rotted stable manure, seem to do the best. The seeds should be soaked in water twenty-four hours before planting.

Forget-me-nots are entirely too sweet to be left out of the garden. They should be planted in a protected corner in a soil that will not sour easily. (Soil composed chiefly of leaf mold never sours under any circumstances.)

THE MILCH GOAT

Will be the subject of one of our feature articles next month. Herta C. Davis will tell some true and inspiring anecdotes in her entertaining way, and incidentally will give you some real information about these interesting and profitable little friends of mankind. The milch goat is in the limelight. Don't miss this vitally interesting article in the October issue!

Turns in little more than its own length

The Cletrac is being more extensively used for orchard work than any other tractor because of its small size, short turning radius, sturdy construction and economical operation.

And because of its distinctive tank-type construction it is particularly well adapted for work on hills and over loose, soft soil.

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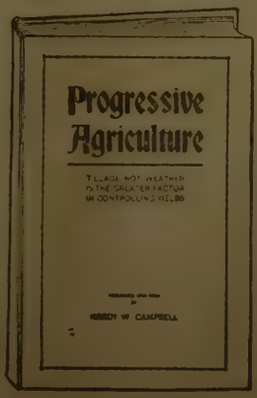

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Ghirardelli's Ground Chocolate is put up *only* in cans—to safeguard your health and to protect you against inferior substitutes. Look for the label. Then you will be doubly sure that you are getting the *original* Ghirardelli's Ground Chocolate.

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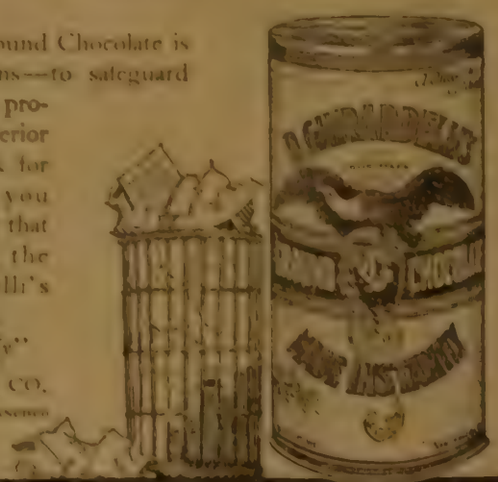

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If you are not entirely satisfied we will cheerfully refund your money. This is the best yet.

TEA, COFFEE AND BEVERAGE CO.,
316 West Fifth Street, Los Angeles, Calif.

The Story of California Plums

(Continued From Page 37)

other struggling growers. They are good bearers, producing a large crop of good-sized fruit each season. The fruit is almost globular, of a red cherry-red slightly marbled and freckled deep with yellow. It has a deep yellow juicy flesh, decidedly sweet, a somewhat peculiar but agreeable flavor and a small pit.

These two plums, the "Burbank" and the "Satsuma" were the only ones of the twelve Japanese seedlings sent me by Mr. Loomis that I considered worthy of introduction. But "the well-known horticulturist" P. J. Berckmans of Augusta, Ga., wished to test the others at his place, in deference to this wish I sent a few buds of each to his nurseries. He grew a number of these and distributed them through various sections of the South. Afterward Professor Bailey came across some of these, as they were passed, he designated two of them as the "Babcock" and the "Hackes." Another of the lot since has been named the "Willard." My first judgment regarding these plums has proved correct, for so far as I know not one of these named and introduced later has proved of any especial value.

Prunus Samoni Typ

The "Chabot" Plum

Another plum that I introduced about this time was imported by Mr. Chabot of Oakland, Cal., who in exchange for some buds sent the one with some other varieties. This plum, which was introduced in 1885 as the "Chabot," has become popular in some sections under various names, such as the "Chase," "Bailey," "Hattonken" and "Yellow Japan." I did not particularly recommend this variety on its introduction, as to my taste it was too acid, though it was large and seemed to be hardy and productive. Later experience has verified these conclusions.

The tree is a strong, vigorous, upright or slightly-spreading grower, and highly productive. The fruit is of good size, somewhat heart-shaped, its under-color is yellow, deeply overlaid with dull red, showing many golden dots, quite beautiful, when fully ripened, dusted dull red beneath the thick bloom. The yellow flesh is firm, not rather juicy, quite acid, but good flavor. This plum in many respects resembles the "Burbank," especially in color, but is two or three weeks later. It is also a later bearer, usually ripening two or three weeks later than the "Abundance." This is a marked advantage in cooler climates, since it escapes the late frosts more frequently than the earlier blooming earlier.

The "Botan" or "Abundance"

The plum known as the "Abundance" was one of the many plums imported from Japan by B. H. Berger and Company, they of San Francisco, who were dealers only, not growers. On tasting one of these and recognizing that it was a valuable plum, I made a special distribution of it all over the United States under the name "Botan." J. T. Lovett of New Jersey, who purchased some of the grafts from me at that time, named it "Abundance" in 1888.

The "Abundance" is a good sized plum, very juicy, from nearly spherical to distinctly shaped pointed. The color is a rich yellow with dots and splashes of red on the sunny side, sometimes on the exposed side it is generally blushed with red. The flesh is deep yellow, juicy and sweet. It is of good quality when well ripened, and clings to the stone, semi-cling.

This is a fairly strong growing upright tree with rather narrow leaves. The trees bear abundantly and usually need thinning to insure the best quality and size of fruit. It has proved to be hardy in the Eastern States, where it is often grown.

I had another Japanese plum from the same source imported at the same time under the same name which I called the "Swee Botan," not so firm in flesh but sweeter than the other "Botan," and of a richer crimson color, a superior plum, indeed for home use. While B. H. Berger and Company were the importers of this plum, it was in America was on my place. In these "Botan" plums are still used to some extent, though they are being generally superseded by varieties of the "Burbank," "Abundance," "Satsuma," and others.

In a later article I plan to give a very interesting history of the production and introduction of the many wonderful shipping plums which were later produced on my place.

Effects of Prohibition Not Yet Pronounced

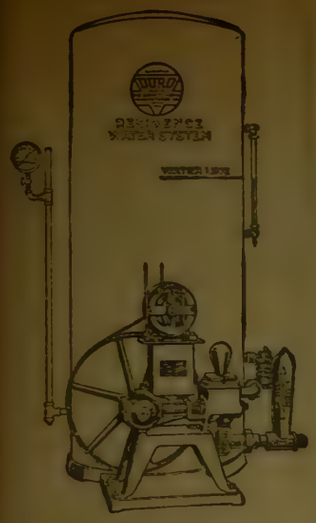
The advent of prohibition has had no effect upon the California hop market, dealers of Northern California report. Eastern brewers are buying up all the hops obtainable. Hop dealers expect a price of 75 cents a pound by winter. Contracts for the hop crop for the next two years have been let and range in prices around 40 cents a pound.

Declaring that he has a ready market in Europe for dried wine grapes, Joseph Herspring, for many years engaged in the dried fruit business, will make a specialty of this branch of fruit drying at his new plant in North Sacramento. He is contracting for these grapes at $25 a ton, which is a higher price than wine grapes brought before there was any restriction on the manufacture and sale of vinous liquors.

The Prohibition Amendment certainly holds no terrors for P. H. Smith, Sacramento County vineyardist, who is now feeding wine grapes to his hogs and reports that he is greatly pleased with the results. Alternated with alfalfa, wine grapes produce a corking hog porker in no time, says Smith, who further asserts that they make cheap feed.

Vegetable Seed Production

The production of vegetable seed used in the United States has been revolutionized as a result of the war. Domestic production of seed was increased many fold. Previously most of the beet, carrot, radish and spinach seed used in this country was imported. American seed growers have perhaps brought the industry in all cases up to the high standard attained by European growers after generations of study and experience. Yet great strides have been made, and instead of being an importing country, so far as seeds are concerned, the United States is now an exporter.



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This new 12-20 is a light weight tractor that will out-pull, out-last and out-dividend other tractors of equal rating.

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Silo Repairs

NOW that the cost of constructing silos is high it is more important than ever to protect against decay those that are already built.

A good inside coating for silos is coal-tar solution, thinned if necessary with gasoline, and applied with a paint brush. The best plan is to apply it one or two days before the silo is to be filled, but it can be done successfully during filling, the men in the silo painting a strip as high as they can reach, and repeating the process periodically until the top is attained. When put on in this way the material must be thinned with gasoline, which evaporates almost immediately and leaves the coal tar dry enough not to injure the silage.

The same preparation is good also for coating the outside wall. The only objection is that black outside paint is not as pleasing in appearance as that of a lighter color. The high cost of linseed oil and prepared paints, however, has caused many silo owners to neglect painting with those materials, and a black outer coat is certainly preferable to deterioration for lack of paint.

Owners of concrete and cement-stave silos frequently go over the surfaces with a thin cement wash, made with cement and sand, and applied with a brush. This not only tends to prevent cracking and scaling, but greatly improves the appearance of the silos as well.

Wooden-stave silos that have begun to rot at the base—where decay usually begins—can be saved by sawing off the rotten portion. It is necessary, of course, to block up the silo before the sawing is done, and then to lower it gradually. Carefully handled, a silo can be sawed off and lowered absolutely without injury. After this operation there is likely to be three or four years of life left in a silo that without it would have been worthless.

Owners of wood-stave silos, in addition to using paint or coal-tar, should go over their structures carefully in order to make sure that hoops and braces are tight.

Air-tight walls are absolutely essential. A leak as small as a nail-hole has been known to cause the spoilage of several hundred pounds of the contents of a silo.

Silos made of concrete, brick, or other materials of porous or semi-porous nature, are benefited by an inside coating of a preparation which seals the pores and also prevents the action of silage juices on the walls.

The coating hitherto most commonly used for such silos is the coal-tar, thinned with gasoline and applied with a paint brush. A number of materials of like nature have been considered for this work, but the one showing the most promise is paraffin.

How to Apply Paraffin

Paraffin may be applied either cold or hot to silo walls. With the cold method, the paraffin is dissolved in a volatile carrier like naphtha until a saturated solution is obtained. Four pounds of paraffin dissolved in one-half gallon of gasoline or naphtha will make one gallon of this solution. The solution is then applied much like paint to the surface of the concrete, which it penetrates according to dryness and porosity. One gallon has a covering capacity of about 200 square feet.

The naphtha soon evaporates, leaving the paraffin in the holes. When applying the paraffin by this method,

(Continued on Page 45)

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Your taste apparatus certainly cannot be fooled! So, when you smoke Prince Albert and get a lot of delight *you know* you've got the big first prize on the end of your line!

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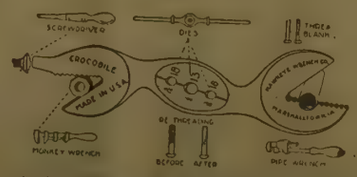

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OWING TO OUR EXPORT business we expect to place our small 12 h. p. tractor on the market about August 15. Tractor is made with 36-inch front wheels and is low enough to go under trees; it is arranged for discs, cultivator shovels, mowing attachment and can be operated by one man; it is suitable for all kinds of gardening and cultivating and handles two 8-inch plows. Price of this tractor is $475.00 at factory. Write for further data. U. S. Iron Works, Seattle, Wash.

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I'll Send This One-Man STUMP PULLER For You To Try 30 Days FREE

Send No Money!!

All I ask is the privilege of sending this Kirstin ONE MAN Stump Puller, for you try **30 days free**, on your own stumps!

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Thousands of Kirstins Now in Use!

One Man Alone Handles Biggest Stumps!

Try my Kirstin on big, little, green, rotten, low-cut, tap-rooted stumps—trees, hedges or brush. See how quick—easy—cheap—the work is done. How easily **one man alone** handles and operates it. If satisfied, after 30 days' trial, keep puller. If not pleased, send it back at my expense. **You don't risk a penny!** *Four easy ways to pay.*

Kirstin ONE-MAN Stump Puller

Single — Double — Triple Power

Weighs less, costs less—yet has greater speed—power—strength—and lasts longer. Clears a whole acre from one anchor! Use it anywhere—steep hillsides, swamps, rough boggy ground or thick timber. Easily moved around field. New patented features give it enormous power and strength. Made of finest steel. Three year **guarantee against breakage**—flaw or no flaw. Simplest, most practical, most efficient land clearer yet invented.

Read These Letters

If there is a better machine than the KIRSTIN, it must be a peach. —V. E. Newcomb, Creswell, Ore.

My pine stumps are solid in the ground, and average about 1 1 2 to 4 feet across the top, but the little KIRSTIN takes them all out fine.—Mr. R. J. Stoltz, Washburn, Wis.

Pulled oak stumps up to 38 in., pine stumps up to 24 in. In "Pipe Clay" [illegible] tap root 12 ft. long, and still I did not stall my Kirstin. —Theo. L. Chappell, Tyner, Chowan Co., North Carolina.

Cheapest—Quickest—Easiest Way to Pull Stumps!

With Kirstin's new scientific leverage principle, a few pounds pull or push on handle exerts **tons** on stump! One man alone pulls stubborn stumps in few minutes at low cost. **No horses or extra help needed.** No digging, chopping or other expense. **Several speeds.** Use low speed until stump loosens, then shift to high—and **rip it out quick!** Patented quick "take up" for slack cable—saves time, cable and machine.

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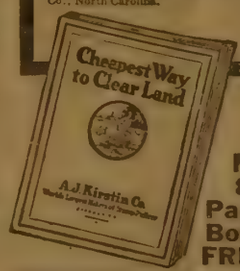
Tells why thousands of farmers prefer Kirstin ONE MAN outfits! Why every single acre of fine, rich stump land can now raise big crops. Labor shortage no longer prevents pulling pesky stumps! The Kirstin quickly pays its cost in BIGGER CROPS—and **goes on making money for years!** The book describes Kirstin One Man Clutch Model; Kirstin One Man Drum Model; and Kirstin Horse Power Model. Explains four easy ways to pay. Filled with valuable information for farmers. Send Coupon for it quick. Also for Special Agent's Offer. Shipment from nearest distributing point saves time and freight. Address me personally.



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Dear Mr. Kirstin: Without obligation on my part, please send me your New Catalog of Kirstin Stump Pullers. Also Special Agent's Proposition.

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STANDARD OIL COMPANY (California)

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THE TYNDALE EUCALYPTUS CO., ROUTE C, FRESNO, CALIFORNIA ESTABLISHED IN 1883

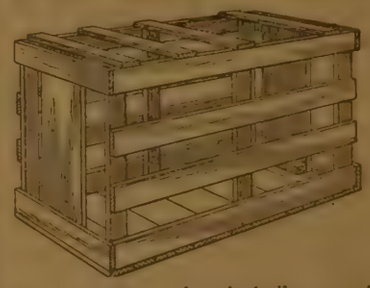
SYSTEM in shop office and field

Hog Shipping Crate

FARMERS who raise pure-bred hogs need practical and strong hog crates in which to ship the animals. Experienced shippers recommend a crate in which the side slats are nailed on the outside, where they are just as secure and safe, and by which the same amount of lumber will give 2 inches more space than if the slats were placed on the inside, as is commonly practiced.

The front of the crate is closed by putting in a board standing endwise instead of nailing slats crosswise, the commonly accepted procedure. The former method is better because the end can be opened readily and the hog can walk out with ease instead of being forced to back out, as in the ordinary crate. In addition, when the slats are nailed crosswise, especially when the crate is used for old hogs, they may be pushed off or broken into while in transit, and sometimes allow the hogs to escape.

For a properly constructed crate the sides should be made first and



the floor, top, and ends built around them. The floor should be laid crosswise, which will make the crate stronger. Only good, strong boards should be used. One 12-inch board or two 8-inch boards are sufficient for the ends. A block should be nailed to the floor 1 inch from each end to keep the end boards from slipping inward. The crate should be built to fit the hog to be shipped and should be large enough for comfort. A well-built crate may prevent serious injury to the hog in transit. A crate of suitable size for a hog weighing from 250 to 300 pounds is 2 feet wide, 3 feet 8 inches long, and 2 feet 8 inches high.

In building the sides of the crate it is essential to use nails sufficiently long to allow one-four-inch clinch, the nails being bent crosswise of the grain of the wood. The nails in the end boards are not clinched and the nail heads are left to protrude enough so that the nails can be removed easily with a claw hammer. The usual top cross board just above the animal's hind quarters is omitted.

Thirst Quencher

An Arizona doctor gives the following advice to desert travelers:

"When possible take along a small bottle of lime juice and a cake of magnesia; drop a little of the juice thereon, and one's thirst will be immediately quenched after taking a mouthful or two; it is soothing and moistening to the mouth."

Robert Wolf of Cochise County, Ariz., kept watermelons of last year's crop until Christmas and marketed them at $1 each. The melons were planted about the first of August, ripening just before frost, and were stored in an adobe house.

Alfalfa Rotation

At the University farm, Davis, the following rotation is practiced with alfalfa. The alfalfa acreage is divided up into seven 40-acre tracts.

Each tract is kept in alfalfa five years. At the end of the fifth year the alfalfa is plowed under and early in December the land is seeded to barley. The barley is taken off with a binder early in May.

The land is then irrigated, plowed, and put into corn, sorghum, or milo maize as a summer crop, which is harvested in October or November.

Manure is applied during the winter, the land plowed and cultivated in the spring and planted to sorghum, which is taken off early as a silage crop. In the following fall or spring the tract is re-seeded to alfalfa.

Heavy yields of all crops in the rotation and the maintenance and increase of soil fertility have resulted from this practice.

Ranch Carpentry Tools

I am fitting up a small ranch, and would like to know what carpentry tools I should buy in order to take care of all odd jobs that may arise. I do not want to get any more than I need, and I wish to select the proper sizes for general use.—E. J. R., Visalia.

The following is suggested as a complete list of general farm carpentry tools: One 26-inch crosscut saw, 1 26-inch ripsaw, 1 compass-saw, 1 jack plane (14-inch with 2-inch cutter), 1 carpenter's draw knife, 1 marking gauge, 1 8-inch square, 1 mallet, 1 saw set, 1 set of auger bits (4-16-inch to 16-16-inch, inclusive), 1 expansion bit, 1 ratchet brace, 2 screwdrivers (1 large, 1 small), 1 countersink, 1 steel rafter-framing square, 1 pair pliers, 1 10-inch flat file, 1 auger bit file, 1 8-inch triangular file, 1 6-inch slim tapered triangular file, 1 12-inch half-round wood file, 1 8-inch oblong carborundum oil stone, 1 16-ounce straight claw hammer, 1 24-inch carpenter's level, 1 putty knife, 1 nail set, 4 socket firmer chisels (¼-inch, ½-inch, 1½-inch), 1 2-pound 2-ounce bench hatchet, 1 2-foot four-fold boxwood rule, 1 crosscut saw tool, 1 pinch bar, 1 spoke shave, 1 screwdriver bit, 1 pair 8-inch winged dividers.

Grains for Silage

Small grains such as barley, oats, rye and volunteer grains, when grown for forage or in case they cannot be used for grain, provide a very acceptable silage crop.

This silage is ordinarily more palatable than that made from alfalfa, but is inferior to corn or sorghum.

If ensiled the small grain should be cut when the kernels are passing from the milk into the dough stage. If the grain has nearly matured it is necessary to add considerable water as it is placed in the silo. To make the best silage, the grains should be run through a cutter and be well packed.

If this is not done, the air in the hollow stems will cause a considerable amount of silage to spoil. When properly prepared, the small grains make a silage of good quality and a palatable, nutritious feed for dairy cattle.

A hood suspended over the kitchen range and connected to the flue in the chimney will gather all the steam and odors and carry them away.

Does It Pay to Store Potatoes?

"I PAID for my potato storage bin in two years," writes Darius Felton of Sacramento County. "While many growers have the idea that our mild California climate makes it unnecessary to provide special storage cellars, I believe that the practice pays. Of course, many growers sell direct at harvest time, and during seasons of uniformly high prices, can afford to do so. But many times it is possible to realize far more from a crop by holding it in storage for a better market."

Whether the spuds are stored in an elaborate concrete cellar or in bins of simple construction, the principles involved are about the same. It is necessary to keep the potatoes away from light, under proper conditions of humidity, and free from extremes of heat or cold. A temperature of from 36 to 40 degrees F. is considered best for potato storage. Care must be exercised not to keep the potatoes in large, bulky piles, where heating and sweating can take place. There should be sufficient moisture to prevent wilting. Usually, in the more advanced types of houses, the ventilating system is provided with a moistening device, so that fresh air is drawn in over receptacles filled with water, and foul air carried out through ventilators in the roof, which may be regulated according to temperature.

Types of Construction

The storage cellar illustrated is of a type recommended by the United States Department of Agriculture. The driveway down the center is a great convenience. However, many satisfactory cellars have been constructed with wood or concrete floors, the entire surface of which is used for storage. One type of house frequently constructed in the East has a dirt floor driveway down the center and ventilated wooden floors for the bins on either side. These floors are sometimes made of strips laid on joists at right angles to the driveway, so that there is unrestricted circulation of air under the potatoes.

The type of construction must conform to local conditions. In most sections of California drainage and ventilation are more important than insulation, as during a greater part of the storage period it is necessary to maintain as low a temperature as possible, rather than to insulate against extreme degrees of cold.

Repairing the Silo

(Continued From Page 41)

special care must be taken to see that there is good ventilation in the silo and that there are no lights or fires nearby. Naphtha is very inflammable, and a serious explosion or fire may result from careless use.

Walls Must Be Warm

Paraffin may also be applied in melted form. It requires six and one-half pounds of paraffin to make one gallon of the hot parrafin solution. The work should be done on a warm day and the concrete must also be sufficiently warmed by artificial heat so that the paraffin may be thoroughly rubbed in. One gallon will cover about 250 square feet of surface. When this method is followed, a blowtorch should be used to warm the walls as the paraffin is being applied, and also to thin and spread the layer of paraffin. Two buckets of paraffin should be used, one to be heating while the other is being applied. The hot-paraffin treatment is one of the most successful for waterproofing surfaces exposed to weather, but it requires some experience to obtain successful results.

The amount of paraffin required to coat a silo may be determined in the following manner:

Multiply the height of the silo by its circumference (the circumference is the diameter multiplied by 3.1416), which gives the number of square feet of surface on the inside of the silo. If the cold method is to be used, divide the result just obtained by 200, which gives the number of gallons of the paraffin-naphtha solution required. Multiply this result by the amount of paraffin and naphtha in each gallon to obtain the total materials required.

Use of Hot Method

Where the hot method is used, divide by 250 the number of square feet of silo wall to be coated, in order to find the required number of gallons. Multiply this result by 6½ to obtain the number of pounds of paraffin required. For example, to find the paraffin required to coat a silo 14 feet in diameter and 30 feet high:

Diameter (14 feet) by 3.1416 equals 43.98 feet, the circumference of the silo.

Height (30 feet) by circumference (43.98 feet) equals 1319.4 square feet, the wall area. Area (1319.4 square feet) divided by 250 square feet equals 5.27, or number of gallons required.

Gallons required (5.27) by 6½ equals 34.25, the number of pounds of paraffin required.

In both cases the cost may be estimated from the local price of paraffin and naphtha. It should be remembered, however, that these figures will vary with local conditions.

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Camels are sold in scientifically sealed packages of 20 cigarettes; or ten packages (200 cigarettes) in a glassine-paper-covered carton. If your dealer cannot supply you, send us $1.80 and we will forward you a carton direct.

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Winston-Salem, N. C.

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HIGH in DIGESTIVE and PALATIVE values, producing MAXIMUM results at the most ECONOMICAL cost.

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Write us about any time or money or labor-saving method or scheme which has made your ranch more productive or your management more efficient. Write us about your experiments and conclusions with fruit, poultry, field crops, livestock, garden or, in fact, any branch of food production. Tell what you did and how you did it. Send photographs or diagrams if they will help to tell the story; they are not required, however. We want plain, unvarnished, straight-from-the-shoulder facts that will hold inspiration for other readers and help them to make more money and improve their living conditions.

The Prizes will be distributed as follows:

First	$ 25
Second	20
Third	15
Fourth	10
Five Prizes of (each)	5
Seven Prizes of (each)	3
Ten Prizes of (each)	2
Total	$136

You don't have to be a writer to enter this contest. Every farmer is an inventor and experimenter. Just take a few minutes to set down on paper some of the short cuts or good ideas that you use in your everyday work and you may win a cash prize.

Write on one side of paper only, and sign name and address plainly. Any number of contributions accepted from each contestant. Articles limited to 1000 words, but the shorter the better, if you tell the whole story.

Address Editor, Orchard and Farm, Examiner Building, Los Angeles, and mark your letter "For Helpful Hints Contest."

The best contributions will be printed. All will be examined at the end of six months by a committee of competent judges, authorities on different branches of agriculture, and checks will be mailed to the winners, whose names will be announced in the issue following.

DON'T DELAY! WRITE NOW!

Use Your Auto!

to GRIND YOUR FEED
FILL YOUR SILO
SAW YOUR WOOD
SHELL YOUR CORN
PUMP YOUR WATER
ELEVATE YOUR GRAIN

Ward Work-a-Ford

Can be used with Ford, Overland, Dodge, Reo and Chevrolet 490 cars and Fordson Tractor. Your automobile has a powerful engine—it will outlast the car and [illegible] save your money and use it to do all your work. No wear on tires or transmission. Hooks up in 3 minutes. No permanent attachment to car. Cannot injure car or engine.

Friction Clutch Pulley on end of shaft. Ward Governor, run belt or belt, [illegible] control. Money back if not satisfied. Ask for circular and special price.

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[illegible] Write today for [illegible] Offer in [illegible]—Don't [illegible]

BUSH Address J. H. Bush, President. Dept. 1167 MOTOR CO., Bush Temple, Chicago, Illinois

Doctoring the Sick Tractor

(Continued From Page 12)

part of the plug against the motor or frame, turn the motor over, with the impulse starter on the magneto working, until the plug is "fired." If a good, hot spark results, the indication is that the ignition system is in good working order.

With a tractor equipped with a high-tension magneto with impulse starter, if trouble is experienced in starting, observe if the action of the impulse is "lively." If not, squirt gasoline with the priming can on the parts, washing off the heavy oil and dirt. Do this until, when the cam is released, it will "throw over" very quickly. This is very important, as it is the speed of the armature that generates the spark, and the greater the speed the hotter the spark.

Then it is up to you to see if you have a "mixture." Quite often the novice, in starting a motor, either does not prime it, or makes the mixture too rich by the use of too much gasoline. In this case, take out your spark plugs and turn the motor over several times with them out, or if your motor is a horizontal one, with drain cocks on the bottom of the cylinder, open them instead of removing plugs. This will clean out the fuel charge and draw fresh air into the cylinders and put the motor in the same condition it was when you started, so that it is possible to begin over.

Eliminating "Congestion"

It sometimes happens that sediment, scale or dirt is carried to the needle valve of the carburetor. In this case you will get a good flow of gasoline at the connection between the carburetor and the supply pipe that supplies the motor. Take the carburetor apart, clean the needle valve passage and clean out the bowl of the carburetor. Make sure that the parts, when replaced, are clean and tightly fitted.

One of the most common complaints, and one which causes dozens of trips by service men is that of the owner who reports that his machine will not develop sufficient power, running well on a light load but backfiring, dying down and sometimes stopping when burdened with a heavy load. In the majority of such cases it will be found that some foreign substance has been put in the supply tank with the gasoline. In other cases scale may have collected at the bottom of the tank, clogging the supply pipe that flows to the carburetor and causing the gasoline to flow very slowly. By loosening the feed pipe at both ends and blowing through it, you can readily determine if this pipe is clear. Then open the valve at the bottom of the tank and see if it flows freely. If not, it will be necessary to remove the valve and trap under the tank, and if scale is found in the tank, to wash it out thoroughly with gasoline.

Don't Be a Crank!

You may start something—but possibly not the engine, if it is out of order. The crank is a useful thing, but why wear it out? Excessive cranking is usually accompanied by loss of religion!

Regulating the "Diet"

If you are using distillate for fuel, you will find that your motor starts much more easily if the needle valve on the carburetor is opened about one-quarter of a turn and left in this position until the motor is well warmed up, then close it down to correct mixture for pulling your load. If, when running in the field, the exhaust belches black smoke, it is an indication that the mixture is too rich for pulling the regular loads. Turn the needle valve down gradually until the motor begins to backfire and miss, then open it up about one-quarter of a turn, or just enough to make the motor run smoothly without backfiring, and at the same time to not exhaust black smoke.

Always look your tractor over carefully at noon and at night, making sure that all bolts and nuts are tight, and that all parts are being properly lubricated. As a rule tractors that have been in use for six months or more are covered so thoroughly with waste oil and dirt that it would be impossible to tell whether or not any bolts or nuts were loose, and in observing the performance of the different machines I have found that the most efficient tractors were the ones that were kept clean, tightened up, well lubricated and well housed when not in use.

Avoiding Overwork

Always drain the radiator and cooling system at least once a week, replacing with fresh, pure, clean water. Do this while the motor and radiator are still warm, and sediment will be more completely removed.

Most tractor motors are equipped with governors, and the motor is designed to develop its rated horsepower at a given number of revolutions per minute (R. P. M.) and does its best work and will last longer if run at this speed. In the operation of power machinery, the pulley upon your machine should be the size that will permit the motor to run at its normal speed, while running the machine which you are operating at its normal speed.

Very often a tractor owner asks me what size pulley he will have to put on his thresher or his pump in order to run it at a certain speed with his tractor. Here is a very simple little rule by which you can soon figure the pulley sizes when you know the diameter of the driving pulley, the normal R. P. M. of your tractor motor, and the speed at which you want to run the driven machine: Multiply the diameter of the driving pulley by the R. P. M. of same and divide the result by the R. P. M. of the machine to be driven; the last obtained figure will be the diameter of the driven pulley. Example:

Size of pulley on tractor, 18 in.
Speed of tractor motor, 600.
Speed wanted on cylinder shaft of separator, 1,250.
18 times 600 equals 10,800.
10,800 divided by 1,250 equals 8.64, or 8¾-in. pulley on separator.

Similarly, if you know the dimensions and the R. P. M. of the tractor pulley and also of the pulley on the machine to be driven, it is possible to find out how fast your tractor will run that machine. In this case, multiply the diameter of your tractor pulley by its R. P. M. and divide the result by the diameter of the pulley to be driven. This will give you the speed at which it will run. Example:

Diameter of tractor pulley, 17 in.
Revolutions per minute, 570.
Diameter of driven pulley, 9 in.
To find speed of driven pulley:
17 multiplied by 570 equals 9,690.
9,690 divided by 9 equals 1,076, speed of separator.

As to "Consultations"

Don't run to the phone and call an "expert" (or rather, I should have said "service man," as there is "no such animal" as an expert) when you have difficulty in starting the motor, but conquer it right there and you will have won a victory and learned something that will be of value to you long after you have ceased to operate that particular machine. Five minutes of study and thought may save you a large sum in wages, repair bills and cost of extra parts. And if the "case" presents complications that are bewildering to you, before sending for a high-priced "specialist" hold a serious "consultation" with the service manual furnished by the manufacturers with your tractor. It may show the light.

UNCLE WISEACRE SAYS:

"Buy fertilizers on the strength of their analysis and not on the strength of their smell!"

Song of the Tractor

By W. H. Gardner

Cylinders—four of 'em!
Game to the core of 'em;
Hark to the roar of 'em;
—Sure hittin' fine!

Here at the wheel of her,
I've got the feel of her,
Clear to the keel of her,
—All of her mine!

Sure got the stuff to her;
Here's power enough to her;
Hard to be rough to her!
—Say, can she pull?

Look at the trim of her;
Oil to the brim of her;
Grease to the rim of her;
—Fuel tank full!

Eager the start of her;
Sturdy each part of her;
Willing the heart of her;
—Cheerful her hum!

Just to be ridin' her,
Gives one a pride in her.
No use to hide it, sir!
—You try it; come!

Grease-Gun

One of the most interesting accessories that will be demonstrated at the tractor show is a pressure grease-gun of improved type, designed to do away with the hard work and dirt involved in filling grease-cups by ordinary methods. It is claimed for this device that it will make possible the lubrication of a car or tractor in 15 minutes. The grease is forced under 500 pounds pressure into every close bearing, the manufacturers state. The results are claimed to be positive and always satisfactory.

Important Coming Events

Among the more important coming events are the Los Angeles Live-stock Show, to be held at Exposition Park, October 18-26, and the California Industries and Land Show, which will take place at the Exposition Auditorium, San Francisco, October 4 to 9.

C. R. Thomas is secretary of the Los Angeles Livestock Show Association and may be reached at the Chamber of Commerce Building, Los Angeles, where is now engaged in distributing premium lists.

Stockmen are also looking forward with the greatest interest to the big San Francisco International, to be held in November. More detailed announcements of these events will be given in our October issue.

AVERY

Avery Orchard Tractors

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2 Sizes, 5-10H.P. and 8-16 H.P.

Announcing the Arrival of the New Member of the Avery Family

The 6-Cylinder 8-16 H.P. $895

To meet the large demand for Orchard Tractors especially designed for California conditions we have built and perfected an 8-16 H. P. Tractor with a 6-Cylinder Motor, which has a built-in governor, high tension magneto, three-speed transmission, and equipped with Hyatt Roller Bearings throughout. It is low, 48 in. It is short, turns 10 ft. radius. It pulls 2 14-in or 3 10-in. plows or a 6-ft double disc. You can now enjoy that same smooth flexibility in your tractor motor that formerly you could only have in your automobile.

For the groves of from 10 to 25 acres we have the late improved 5-10 H. P. Model B—$775.00.

AVERY HEAVY DUTY TRACTORS for open field work are built in 6 sizes, 8-16 H. P. to 40-80 H. P. There is a size AVERY to fit your size farm, whether open field or grove.

Write for Special Catalogue No. A490.

The complete AVERY line of Tractors, Motor Cultivators and Threshers will be shown at

Sacramento State Fair

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Live dealers looking fon an agency especially invited to investigate our proposition.

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Opposite DeMille Aviation Field, Cor. Crescent and Melrose Ave.

AVERY COMPANY

67-69 Beale St., San Francisco

of Pacific Coast

237 S. Los Angeles St., Los Angeles, Calif.

When Time Counts

—when lost minutes mean lost dollars—many and many a man has learned to appreciate the real value of good tires.

An emergency—a quick trip to town and back!

That's when you want to be *sure* of your tires—sure they'll carry you there and back without trouble or delay.

United States Tires are noted for their dependability—the hundreds of *extra* miles they give—their unusually low cost per mile.

And there are United States Tires for every need of price or use. *Five distinct types in all.*

No matter what car you drive or what roads you travel, the nearest United States Tire Sales and Service Depot Dealer can supply you with the tires you ought to have to meet your individual needs.

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"Marketing Is the Better Half of Agriculture"

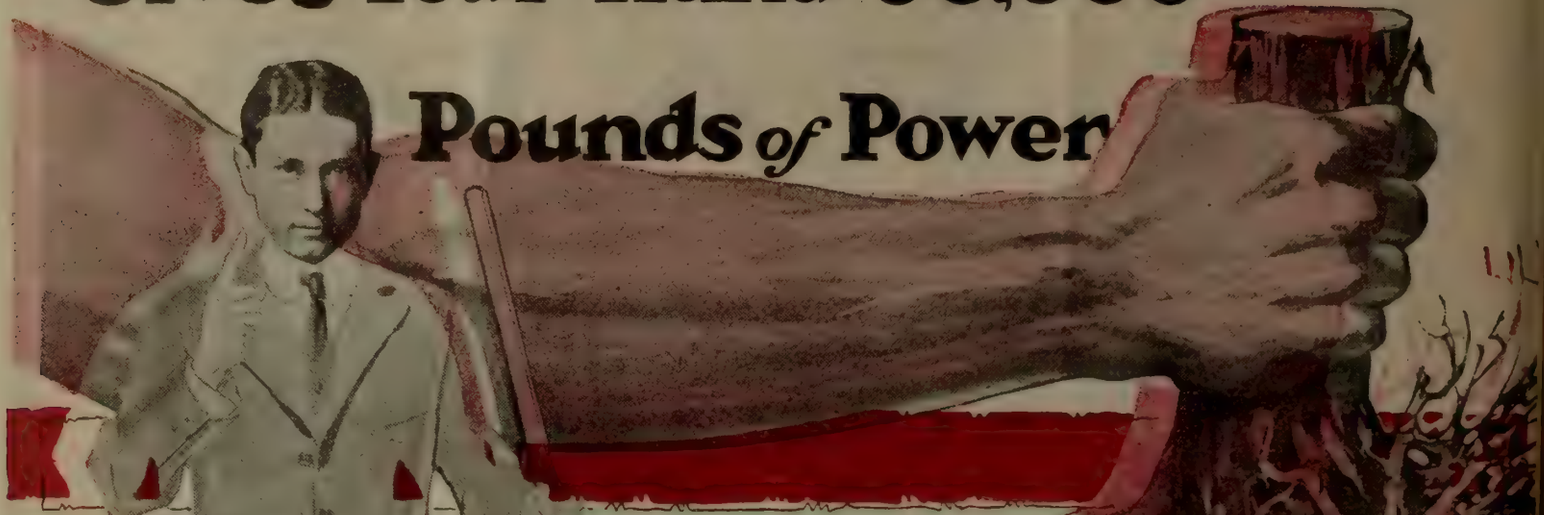
Offices
Los Angeles and San Francisco

The Goat's Milk Route to Happiness

My K Hand Stump Puller

Gives Your Hand 96,000

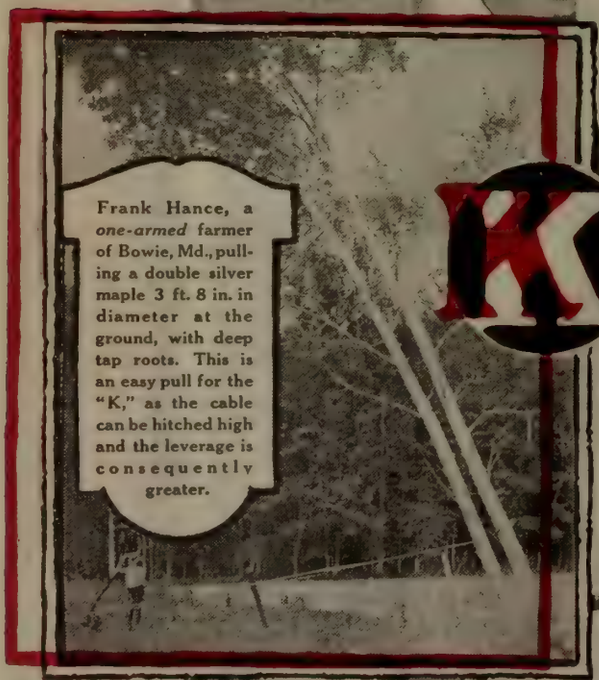
Pounds of Power



Big stumps! stumps and trees with deep tap roots! any stump that can be pulled with the best inch steel cable!—you *alone* can pull with my "K" Hand Power Stump Puller—*without digging and without the expense of teams and powder.* I guarantee it. I refer you to U. S. Gov. officials. I give highest banking references. If you have stump land, the cheapest way of clearing it is with the

HAND POWER

K Stump Puller



Frank Hance, a *one-armed* farmer of Bowie, Md., pulling a double silver maple 3 ft. 8 in. in diameter at the ground, with deep tap roots. This is an easy pull for the "K," as the cable can be hitched high and the leverage is consequently greater.

How the "K" Pulls Biggest Stumps

The "K" works on the leverage principle of the ordinary lifting jack, except that the power is applied on a cog-wheel instead of a standard. 100 lbs. push on the lever develops a 48-ton pull on the stump—all an inch steel cable will hold. One man operates it alone—no teams to pay for—no walking.

A Mechanical Wonder

Made of finest steel—guarante against breakage. Weighs only 171 lbs easily carried or hauled about on its o truck wheels. Has two speeds—60 f per minute for hauling in cable or small stumps—slow speed for heavy pu *Works equally well on hillsides a marshes where horses can not* wo

Owners Praise It

H. Sinclair of the Dept. of the Interior, a U. S. Gov. official, writes: "The stump puller is a wonder."

Ernest Thompson Seton, author and naturalist, declares the "K" "a great success."

Hundreds of owners write in, telling of pulling six- and seven-foot stumps, of pulling faster and pulling bigger stumps than by any other machine.

Special Offer We are making a special offer to get a "K" Stump Puller introduced in every neighborhood. Write us today for full information and for free book on Land Clearing and about our Wonderful Drag Saw.

The Fitzpatrick Products Corp.
Box 25
99 John Street, New York
Pacific Coast Office 182 Fifth St., San Francisco

H.G.Hunzicker of Foster, Wash., pulling a 24-inch fir stump with deep tap roots out of hard ground, without using powder or cutting any roots.

Tear Out and Mail Toda

The Fitzpatrick Products Corp.
Box 25 99 John St., New York
182 Fifth St., San Francisco

Send me full particulars on your spec offer and your free booklet on La Clearing.

Name_____

Address_____

ORCHARD and FARM

VOL. XXXI. OCTOBER, 1919 No. 10

What the Tractor Demonstration Taught

THE "big tops" have been struck, the steel horses have rumbled back over the pavement to their quarters along "tractor row," and another big farm power demonstration has come to a close.

The Los Angeles field demonstration this year was unique in many respects. It was different from any previous show; weather conditions were ideal; the date selected was possibly the most advantageous that could have been chosen and the demonstration field presented plowing conditions which were perhaps a little "less worse" than those obtaining in previous years. Yet, with all these favorable conditions, and in spite of the fact that the show received much publicity, the attendance was rather light.

Estimates of the total attendance for the week ran from 10,000 (by those who were inclined to take a pessimistic view of the affair) to 60,000 (by those who, because of good sales or natural optimism, were less inclined to be logical). Probably an impartial survey of the total attendance would place the figure at from 25,000 to 30,000, although it is difficult to make a count approaching accuracy because of the fact that spectators were continually coming and going.

AIRPLANE VIEW OF THE DEMONSTRATION FIELD —Photo by Hughes.

Many Pleased Exhibitors

But the remarkable fact, in view of the light attendance, is that the exhibitors were almost unanimous in declaring the show a big success. In almost every headquarters tent was told the same story. "Yes, the crowd is thin, but it's a BUYING crowd." The falling off in attendance was attributed to the fact that the tractor no longer possesses fascination for the city resident. Furthermore, the advertising and publicity were spread broadcast over the country districts, by means of the farm journals and country newspapers, so that there was less encouragement of city attendance to swell the crowds.

"Those who ARE here are certainly interested," was the way one exhibitor put it. "Our sales have been ten times what they were at any previous show, in spite of the fact that the attendance has been less than half that of last year."

Other members of the Traction Engine and Implement Dealers' Association expressed surprise and gratification at the number of sales they had been able to close during the week. One tractor concern claims to have averaged the sale of ten tractors a day. There were less sales to dealers and more to individual buyers than in previous years. While it is true that many sales were closed with prospects who had been interested for some time, still, many new buyers were found. In praising the demonstration idea, one salesman stated that his company had made sales in districts where it had previously done little business, these deals involving farmers they had never been able to reach through the ordinary methods. All exhibitors, of course, came away with long lists of "prospects" to follow up later.

Another factor that occasioned pleased surprise among the tractor and implement men was the unexpected attendance from Nevada, Texas, New Mexico, Arizona and even more distant States. Several good sales were made to these "outside" visitors.

Ranchers Like Field-work

In talking to many rancher-visitors, the writer determined that the majority of them favored the "field demonstration" as compared with the "still show" proposed and advocated by a number of local dealers.

"Plowing up these great chunks of 'dobe' is no true exposition of the tractor's ability," insist these few dissatisfied tractor-dealers. "We cannot demonstrate our work in orchard, hillside, sandy, or wet soils. We cannot give the farmer an idea of how the machines will work under varying conditions, any one of which may be encountered on his own ranch."

"But," answer the farmer visitors, "we hold that any machine which will plow up these adobe chunks and make a good showing in such ground as you have at your demonstration field will handle any ordinary soil with ease. And anyway, we want to see them moving."

One of the dealers who believes the field demonstration is the best means of exhibiting the tractors emphasizes this latter point. "Any 'moving' exhibit is certain to attract more attention than one which is lifeless. If we allow a certain tractor to stand idle in front of our tent, it attracts very little attention. If we leave the motor running, a crowd collects; if we attach the tractor to an implement and tear up the ground, a larger crowd collects and most of them will follow it."

Arguments for "Still" Show

In answer to this argument, those who have always favored a "still" exhibit, such as the ordinary automobile show, point out that a much larger attendance can be secured by providing a convenient city show, with amusement features calculated to draw and hold large crowds, and with the exhibits appropriately "dolled up."

It has been suggested that such a show, accompanied by "movies" of the various machines doing all kinds of work under all conditions, would be the nearest approach to a field demonstration.

Indeed, one of the exhibitors at the recent meet took advantage of the possibilities offered by motion pictures. One of his tractors, connected by belt to a powerful dynamo, generated "juice" for a moving picture outfit installed in an adjacent tent, which contained screen, camera-box and chairs. His "theater" was well patronized. The pictures showed the tractor in operation under varying conditions. Back of the tent was the allotment of ground on which another tractor of the same model carried out the regular program of plowing and harrowing.

New Idea Big Success

There is little possibility that the "public demonstration," or competitive plowing exhibition indulged in at former shows will ever return to favor with the Los Angeles dealers. For this year's plan brought forth unanimous approval. The dealers were able to concentrate their efforts on making sales to real "prospects," and there was less confusion, dirt, annoyance and expense.

The arrangement of the exhibits was more compact, and the "streets" were kept sprinkled and dragged, obviating much of the discomfort apparent at previous demonstrations. Some of the exhibitors complained that their allotments of ground were insufficient, one or two dealers having no unturned land left after the fourth day of the meet. Most of the exhibitors, however, agreed that a small tract is sufficient for demonstrating to interested visitors, a few furrows sufficing to show the inquirer what the machine can do.

The outstanding feature of the show was the demonstration of belt-power machinery. Many of the tractor-motors were operated continuously, hour after hour, each day of the show. Everywhere wheels were turning. The machinery operated by tractor-power included hay-presses (pumps, ensilage-cutters, feed-grinders, sprayers, saws and threshing-machines.

Belt-work Featured

Much of the power-driven machinery was shown in actual operation. Hay was baled

(Continued on Page 10)

OFFICERS OF TRACTION ENGINE AND IMPLEMENT DEALERS' ASS'N.
Seated: (Left), H. L. Marsh, President; R. M. O'Neill, Secretary and Manager. Standing: (Left to Right), J. R. Graves, Treasurer; A. W. Hudson, Director; M. D. Schatzman, Director. Other officers are R. B. Dunsmore, Vice President, and J. E. Hymer, Director.

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How We Planned for Success

FIVE years ago it was a "tumble-down" ranch near a sleepy little village, in the back country. It was one of California's oldest pioneer towns and had been the scene of many a cowboy riot, but finally had settled down to mere lethargic existence.

It was a singularly picturesque spot, at the foot of a high range of mountains, and surrounded by them on three sides. A fringe of cottonwood trees skirted the base of the hills; in fact, big cottonwoods all over the valley told the story of an underground water supply in this semi-arid country.

At first glimpse it did not look very inviting; we had sought this somewhat isolated spot because my husband had heard that the valley had flowing wells, and that the land was cheap. He thought, as he glanced about over the town, that water seemed sadly lacking; there was scarcely a lawn to be seen, and vacant lots were grown up to weeds.

However, he was anxious to get settled and having been told by a friend that water could be readily developed and that the soil was rich, he began an investigation. A few small patches of alfalfa of the rankest growth he had ever seen told him alfalfa would thrive if given an opportunity. Nearly every home had a well in the back yard, which was constantly flowing, unless capped; the flow, however, was not sufficient nor the force great enough to water any great amount of alfalfa.

The Future Home

After several days' investigation he came upon a true "tumble-down ranch." The buildings were old, but comfortable, and offered interesting possibilities. All kinds of fruit trees were growing, and there were big shade trees of several varieties. But the land presented a sorry outlook. The farm consisted of 40 acres, and had been partly sown to wheat during the winter; but now in August it was lying idle—simply a sun-baked, arid weed-patch.

On the strength of his faith in alfalfa, and evidence afforded by the few patches he had seen growing, my husband bought the place, paying $4000 for it. After we had moved in and become settled, his first action in the alfalfa venture was to engage a well-digging crew. He put down a good well and installed a pumping plant of sufficient capacity to furnish water for the entire 40 acres. The cost of well, engine, shed and reservoir was $2500.

During the winter, after the rains had set in, he plowed and leveled the ground, and the first of February sowed alfalfa and barley. The first cutting was made early in June. That first year he harvested altogether 100 tons of hay!

We had lived in the Middle West and knew the value of cows, especially in connection with alfalfa farming. The town had a small creamery, which was shipping to Los Angeles. Most of the ranchers had small herds of cows, letting them graze winter and summer, on the wild, salt grass pastures. Although this sort of feed sustained life, it was almost worthless for milk-producing purposes.

We succeeded in picking up 10 good cows, mostly Guernseys, and including one or two Jerseys. For the first two years after the alfalfa become established, hay was selling most of the time around $20 a ton. Many of the neighbors laughed and scoffed at us for milking cows, when selling the hay, in their estimation, would have brought more money and involved much less work. But we went serenely on our way, assured that our laugh would come some time, for we knew that while the price of hay fluctuated according to the winter rains, the price of milk and butter would vary but little, and the demand was likely to continue good.

Summary of Results

We now keep about 15 head of hogs and 200 Rhode Island Red hens, feeding them the skim-milk brought home from the creamery. Our entire 40 acres is in alfalfa. It averages about five tons per acre for the season, making about 200 tons of hay. Out of this we keep about 80 tons for feeding purposes. The cows are kept in a corral with plenty of shade, water and alfalfa hay, this being the only feed we use. Now the animal income from "Tumble-down Ranch" is as follows:

Cream sold from 10 cows	$ 700.00
120 tons of hay at $12 per ton	1440.00
Eggs from 200 hens, net	250.00
Hogs, net	180.00
Total	$2570.00

Expense account as follows:

Cost of running pumping plant	$ 160.00
Wages for extra labor	150.00
Cost of baling hay	240.00
Total	$ 550.00
	2570.00
Net profit	$2020.00

Our two boys help with the milking night and morning, leaving them free to continue their studies in school and doing away with the necessity for keeping a regular hired man.

Today "Tumble-down Ranch" has become "Prosperity Home," and you will find this name arranged in rustic letters at the entrance to a wide graveled driveway. The low, rambling shack has been converted into a vine-clad bower of beauty; the smell of new-mown alfalfa hay fills the air.

On the streets of the once sleepy town is a busy hum; the sun-scorched valley of five years ago is now a mass of waving fields of green; happy, prosperous homes are dotted over the valley and town; the boys and girls are being sent to college; automobiles are whizzing along the smooth highways. It is one of the most prosperous valleys in the State, and its rejuvenation, and our success may be summed up in one word—alfalfa.—Mrs. W. H. Brace.

Scientific Selection of Spuds

IT IS now generally recognized by progressive and far-sighted potato producers that the custom of using as seed, potatoes left from the previous season's crop, after having disposed of the best, must be discontinued if the present quality and yield of the crop is to be materially improved. The grower cannot expect to get maximum yields from inferior seed stock any more than the dairyman can expect to get maximum milk yields from scrub cows. The best time to select seed potatoes is in the fall when the crop is being harvested. Then the yield of the individual plant and the quality of the tubers can be considered.

Good seed is pure in respect to the variety; is produced by healthy, vigorous, heavy-yielding plants grown under favorable climatic conditions; is somewhat immature; reasonably uniform in size and shape; is firm and sound. The first sprouts should begin to develop at planting time.

Strain Must Be Maintained

Potatoes will degenerate or "run out" in the hands of the man who plants culls or left-overs each season. Like produces like. Improving a strain of potatoes is a slow process, but holding a strain up to a high standard is not too difficult. It is very easy on the other hand to allow a strain to run out rapidly.

In growing potatoes for seed, one must watch the plants from the time of planting the seed piece until the harvest. The plan most commonly practiced by experienced farmers is to grow the seed for the succeeding crop in a field separate from the one used for the main crop. The seed-plot is planted with selected tubers or the best ones obtainable on the market. The soil where potatoes are grown especially for seed should be deep, mellow, well-drained and well supplied with organic matter. Make sure there is but one variety planted in the field from which seed stock is to be selected.

Points to Consider

Dig early and discard all hills or plants in the patch which show curly leaves, turn yellow, mature extra early, or seem to blight badly. Dig down around the stems and see if stems are spotted with black, or otherwise diseased. Close observation is necessary in order to determine what hills are affected by disease.

When the tops have begun to turn brown, but before all green has left the leaves, is about the time to dig for seed.

The hill with one or two hardy, well-branched stems is usually better than one which has many stems that have developed from the original seed-piece. The size of the stem, the number of branches, the manner in which they grow, will readily indicate to the observing grower what size and number of tubers will be found. With experience, one can go through a field and select his seed stock quite rapidly. The process will require two men, one to dig the tubers and one to carry two sacks. One sack is used for tubers selected for seed and one for the other potatoes that are turned up.

Soil and climate have considerable influence upon the selecting of seed stock. In very fertile, rather heavy soil, hills with only one stalk are apt to develop tubers which are too large. Hills having two or three stalks will give more tubers of smooth skin and medium size.

Maintain a Standard

Of course one must use great care to save tubers from the most productive hills. In good soils, one can set a standard of 10 to 12 good tubers to a hill and refuse to save seed stock from hills below that standard. Much care should be exercised in selecting pieces that are true to type.

By practicing careful rotation, the grower may produce potatoes in the same soil for many years. Do not succeed a potato crop with a potato crop, but plant legumes or other crops part of the time. If diseases become established, the soil may become so infected that growing potatoes in it may have to be abandoned for several years.

Profit In Good Seed

Reliable seed firms are looking for men who know potato growing, to furnish them with seed. Some men are making very attractive profits by making a specialty of potato-seed production.

There is altogether too little certified potato seed stock on the market. That which is available brings a fancy price. One Southern California grower recently sold his certified crop from 100 acres, for double the market price. It cost him no more per acre to grow spuds of this quality than it would have cost to grow mediocre stock. His yield per acre was about three times the average yield and his profits per acre were more than six times as great as the profits of other growers in his vicinity.

The procedure to follow in securing certification of a field can be learned from the horticultural commissioner. The usual procedure is for the inspector to see the seed before it is planted; then to see the growing crop and later to inspect the field as the crop is dug.

"Pedigreed," certified seed, not only of potatoes, but of all field and garden crops, is becoming just as much a factor in agricultural development as pure-bred livestock. Any potato grower, whether operating upon a big acreage or merely a city lot, can practice seed improvement and selection. In fact, it is within the scope of the small gardener even to create new varieties of potatoes by use of seed-balls which develop on the vines (like tomatoes). But whether we carry the process that far or not, all of us who grow "spuds" can select and plant better seed, treat the seed for diseases before it is planted again, and co-operate with the horticultural authorities to prevent spread of disease and improve the standard of this important crop, one of California's great assets.—C. L. Fenton.

The Lesson of the Corn

BY MEREDITH NICHOLSON

POETS and orators have celebrated the glory of American corn; but corn remains its own best interpreter. It seems forever to be uttering a message. Even on windless nights there are infinite stirrings and whisperings, as though an invisible spirit walked the furrows.

No other plant known to our fields is at once so interesting, so opulent, or so decorative as corn when it has sprung to full height and the grains await their transmission into ivory or gold. A field of wheat is a thing of beauty and grace, tremulous and shimmering in the lightest airs; but corn challenges attention like a militant host that marches with banners flying.

Corn gave to the American pioneer what was truly the hard-won bread of democracy, and corn remains a fitting sign and symbol of American ideals. It is finely representative of the vigor and wholesomeness of American life. Planted in hope, it is watched and tended with full confidence in the reward. It publishes broadcast its lessons of patience, industry, and tolerance. No stalk jostles or tramples its neighbor. Each full, ripe ear is a renewal of the old pledge between America and Nature, her mighty and unswerving ally.

"That only holds men together," wrote Whitman, "which aggregates all in a living principle." The corn's serried ranks give the impression of a harmonious whole, no stalk more favored than another, but all drawing life in amity from a common soil, and warmed and quickened by the same sun, dew, and rain.

We need for America, more and more, the steadfastness and sobriety, the generosity and concord that are the lesson of the fields. Through Autumn's bright portals we watch the ebbing of Summer's tide with a kindling of nobler impulses and the awakening of higher aims as we dream of an America, prosperous, happy, and secure, that shall one day proclaim from all her shores,

"Peace to the world, from ports without a gun!"

Getting the Goods on Biddy---Can Poultry Raising Be Reduced to an Exact Science?

Upson, who graduated by choice and determination from occupation of an office-stool to ownership of a successful poultry-plant, believes that guesswork should be eliminated from the chicken business. No doubt many of our readers who raise poultry will disagree with some of his convictions, but it must be admitted that he has had the courage to support them. At any rate, is there a single member of the Orchard and Farm family who will not read with interest the true story of this enterprising poultryman and his unique methods?

By O. H. Barnhill

CAN any type of farming be reduced to an exact science? U. L. Upson of Oregon thinks that poultry raising can, and he is proving his faith by his works.

His system of bookkeeping is so exact and complete that he always knows the precise condition of his business; the pedigree and egg record of every hen; the cost of producing every egg, chick and chicken; his gross and net income and the precise profit on every sale. There is no guesswork at Ill-a-hee, the euphonious Indian name (meaning "home") by which his poultry farm and its products are known.

All operations are carried on with the accuracy of a machine, which turns out high-grade eggs and fowls of specified standard quality and quantity. The demand always exceeds the supply, and apparently there is no prospect of the latter catching up with the former.

When Mr. Upson decided to engage in the poultrying profession he made a thorough and careful study of the business in order to determine what kind of plant would prove the most profitable in his particular locality and how it should be started and managed to insure success. To make this study complete and comprehensive a three-months' tour of investigation was made through Western Oregon and California, stops being made at nearly every town of 2500 population or over between Portland and Monterey and all nearby poultry plants being visited.

Antiquated Methods?

"I did not find a single up-to-date trap-nest breeding plant," says Mr. Upson. "There were many fuss-and-feathers chicken farms but none where a conscientious endeavor was being made to increase the productiveness and economical value of the American hen. It appeared to me there was need of just this kind of an institution and I made up my mind to build and conduct one of this character."

At this time Mr. Upson was a clerk in the Forestry Service at Grant's Pass, Oregon, to which position he had secured a transfer from the Panama Canal Service. The expenses of his poultry-inspection trip were paid by the delivery of stereopticon lectures on the Panama Canal. Fourteen years of canal and railroad office work furnished the necessary technical training in business methods and accurate accounting.

The first phase of the chicken business studied was the reason for the failures of so many persons who engage unsuccessfully in commercial poultrying. It was found that nearly all who had failed had started with limited capital and still more limited experience. By the time they had acquired the experience they had lost the capital. Instead of starting in a small way and conserving their capital many of them had invested everything, failed through lack of knowledge which comes only from experience, and had nothing left with which to begin over again. One man had spent several thousand dollars in building and equipping a large poultry plant, bought 8000 chicks—and raised only 800. Upson started with six pullets and one cockerel of the Ringlet strain and gradually increased his flock until it outgrew the two city lots on which he lived. A ten-acre tract just outside the city was then purchased and the present plant gradually developed.

"Follow the Leader"

The question of breeds next came up. "My investigations convinced me," relates Mr. Upson, "that the present popularity of Leghorns is largely a bell-wether proposition. People are prone to follow the lead of some successful poultryman who happens to have that particular breed. It is true that a Leghorn hen will lay a few more eggs in the course of a year than a Plymouth Rock, but she lays most of them in the spring, when eggs are cheap, while the Rocks lay about as many high-priced eggs as cheap ones. This gain in price more than offsets the slight advantage in quantity of production acceded to the Leghorns. The following monthly egg record of nine of my Plymouth Rock hens shows what a large percentage of the year's production is laid during the months when high prices prevail:

Month:	Jan.	Feb.	Mar.	Apr.	May.	June
Eggs:	111	140	171	154	144	129
Month:	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Eggs:	95	102	107	125	137	112

"These hens brought me more egg money during the last three months of the year than at any other season, owing to the large quantity of eggs produced and the high prices which prevail at that time of the year. Of course it costs a little more to feed a Plymouth Rock hen, but she weighs nearly twice as much as a Leghorn and sells for a higher price per pound. Government tests show that brown eggs are 2 per cent richer than white ones and in some of the leading markets of the country the former command a premium of 2 to 3 cents per dozen. The heavier breeds are not so nervous and flighty as the Leghorns and do not require such high fences. For these reasons I decided to raise chiefly Plymouth Rocks, the most popular chicken in the United States."

Utility First

The breeding of exhibition birds which score high at poultry shows and sell at fancy figures looked very attractive, but the standard by which such fowls are judged is based largely upon looks and fine feathers, without regard to egg production. Upson decided that the hen to raise was the one that fills the egg basket, especially when the price rises above the "two-bit" mark, regardless of her personal appearance, since feathers do not make the hen, any more than clothes make the man. Furthermore, when a man buys a setting of eggs, a hundred baby chicks, a dozen pullets, or a cockerel, he is entitled to know not only the egg record of the mother hen but also that of the hen that produced the sire, since egg laying proclivities are transmitted through males, not females. Hens which have passed their pullet year—that is, have been laying for twelve months or more—should possess egg records of their own. The production of this class of stock is made possible only by a complete and continuous system of trap-nesting, which is one of the corner stones of Ill-a-hee, the others being system and sanitation. Some poultrymen endeavor to judge the laying proclivities of a hen by feeling the pelvic bones. "I decided to be a trap-nester rather than a rump feeler," states Upson, who apparently has little faith in the "Hogan" system.

Let us take a worm's eye view of the Ill-a-hee scientific system of poultry production. In developing the ten-acre tract above mentioned an accurate map was first made of the property and then a comprehensive set of improvements planned. Another map, mathematically correct, was made, showing the exact location of each building, fence and crop contemplated. This systematic method of farm development has many obvious advantages over the usual haphazard manner of making improvements.

Handling the Eggs

During the incubation season all eggs from the breeding pens are marked with the date and number of the hen by which they were laid. At the hatching house they are placed in a 2400-egg incubator and on the nineteenth day sorted into specially constructed pedigree trays, each hen's eggs being placed in a separate compartment. After the hatch is completed each chick is given a distinctive toe mark, which indicates its origin. From the incubator the chicks are taken to the nursery brooder and four days later are removed to the brooder house. The latter is heated by hot water and divided into pens having a hover at one end and at the other opening into outside pens the same width (four feet) and twice as long (32 feet), which are planted to rye and rape. Each lot of 100 chicks is given 60 pounds of chick food spread over two-inch layers of chopped straw, fifteen pounds to each layer.

At the age of eight weeks the sexes are separated and the chicks removed to pasture occupying an acre and a half. In order to distinguish the different hatches and make it possible to cull out the runts, each chick is marked with a colored band. A merciless system of culling is practised, all slowly-developing fowls being thrown out and only strong, vigorous stock retained. When surplus cockerels and cull pullets weigh around a pound each, they are placed in fattening crates and fed a buttermilk mash. Within a short space of time they double in weight and the flesh becomes soft and tender.

Early-Laying Pullets

The growing pullets are given free range and plenty of grain and green stuff, together with charcoal, grit, shell, some beef scrap and an abundance of clean, fresh water, the aim being to produce large bodies with intense vigor and vitality.

The results of the Ill-a-hee system of breeding and feeding now begin to show, for although no condiments or forcing mashes are fed, the pullets begin laying before they are five months old—not exceptional individuals, but whole flocks. For example, 40 pullets hatched November 30 began laying April 2, when they were just four months and two days old. Three weeks later those 40 pullets were laying sixteen eggs a day.

As soon as the pullets show signs of maturity, they are given a numbered band, which is affixed to the leg, and are transferred to the laying house. This is 18x72 feet and is di-

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A CERTAIN MAN

Spent $5000 getting into the poultry business. After equipping a large plant, he bought 8000 chicks—and raised just 800!

ANOTHER MAN

After a tour of inspection, on which he paid his way by giving lectures, drew his own conclusions from his observations, and started with six pullets and a cockerel. His plans for a 2000-hen plant are now almost realized.

THE LATTER

is the subject of our story. His portrait appears at the left.

Laying House at Ill-a-Hee Ranch

The end doors and one front cleaning door are shown open. Perfect ventilation is furnished by the arrangement of windows. Plans for development include the erection of other similar units.

Nursery Stock May Make or Break You!

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
Pomologist, Chaffey Junior College of Agriculture

AN ORCHARD should represent a life-time investment; yet how often the planter is doomed to disappointment when something goes wrong and after a few short years the trees are found to be nonproductive or dead!

Many a man has planted fruit trees with high hopes and visions of a time of ease when the downward side of life is reached, only to lose everything through no direct fault of his own.

An Apple Orchard That Pleases the Eye

Uniform size of trees, as a result of the use of uniform nursery stock, is one of the most desirable characteristics in any orchard. Not only is the appearance improved, but other qualities as well.

Not all failures, of course, are of this nature. It is not too harsh to say that the man who wilfully neglects his orchard is deserving of such a fate. But, on the other hand, the grower who possesses good orchard sense, and who, after observing every detail of well grounded practices in choosing his land and in planting and caring for his trees, finally fails, is certainly deserving of sympathy.

How can the orchardist who buys good land and who cares for his trees according to the approved methods of science, fail to make a success of his venture? One answer is simple and may be found in the two words: Poor stock!

Is the Nurseryman to Blame?

Before entering into a discussion of this question, it is only fair to say that nurserymen are not always to blame for the planting of poor stock. There are planters who will insist upon having cheap trees and the nurseryman, in supplying the demand, must do so from his lower-grade stock. As more and more nurserymen, however, are learning what constitutes a good tree, they are taking increasing pains to grow only such as will give satisfaction in every respect.

Of course, there are still some who are in the business to make all they can from season to season, regardless of the class of trees sold. These men are enemies of the orchardists, and their methods should be exposed when discovered.

Poor Root System

There is much evidence pointing toward incrimination of careless nurserymen for the troubles of the orchardist whose trees "give out." For instance, there is the ordinary case of non-recovery, or at least incomplete recovery, of trees which are weakened or stunted in the nursery or which have not received the best of treatment in the interim between the time of planting in the nursery and the time of planting in the orchard.

One fertile cause of failure of trees to do well when planted in the orchard is a poor root system. This may be a result of growth under soil conditions that were unfavorable to root development, or, as is more often the case, to careless digging of the trees by the man who grew them. There is so much need for a good, healthy root system that no nurseryman should neglect the care that is necessary to prevent excessive loss of roots in digging.

Yet some are careless, as thousands of trees that have been examined by horticultural inspectors and others, bear witness. Probably the roots is dry ground, which, when trees are dug, prevents the digging plow from penetrating the soil to as great a depth as is necessary in order to save the entire root system.

While there may be advocates of cause for short, stubby and sparse severe root pruning who would have us believe that such destruction of roots does not result in great injury to the tree, it is only necessary to call their attention to the fact that feeding roots are not large roots, but small fibrous roots, and that these occur more abundantly on smaller root-growth toward the tips of the root system.

Facts About Roots

When all the fibrous roots, with the root hairs or feeders, are destroyed in the process of digging, the tree, after planting in the orchard, must necessarily depend upon gaining its life sustenance from stored-up plant food in its cells. This must be the source of life until such time as it may take the injured root system to re-develop the fibrous roots and root-hairs which have the ability to absorb the crude plant food material from the soil.

The writer has inspected may trees for which the orchardist had paid a good price, which had none of the smaller roots left, and which, as a consequence, could not be expected to do their best even under the most favorable conditions.

Plant life in many respects, resembles animal life. If this fact were more strongly impressed upon the average orchardist possibly trees would be better cared for. The belief that plants do not possess individuality is an entirely erroneous conception of them. No two are exactly alike and, therefore, they will not all grow to be the same size in an orchard under identical conditions of climate and soil. Every orchardist, however, wishes to develop an orchard in which the tre s will not only be uniform in size but also of the maximum size.

About "Runt" Trees

In the row of ordinary nursery trees there is not as much uniformity as might be desired; that is, among trees of desirable characteristics and good growth, there are always "runts." These runts are sometimes a result of inability of the root system to gather in the elements of plant food because of some unfavorable condition, or they may be due to causes that are indeterminable in the absence of any data regarding their parentage. In other words, there are in the nursery weak individuals which, under most favorable conditions, will not attain the size of stronger individuals. These individuals are usually not discarded by the grower but are graded out and sold to the planter at a lower figure than the better trees.

When planted in the orchard such trees never lose their inherent tendencies and will never be a success, no matter how favorable environmental conditions about them may be.

Good Stock Always Pays

It is generally unsafe, on this account, to buy cheap trees. It is not the intention to convey the idea, however, that all small trees are cheap trees, nor to lead the reader to believe that it is possible always to distinguish between good and poor trees. The point that it is intended to emphasize is this: The planter should beware of cheap trees because in buying them he may be getting stock that possesses the characteristics of a parent which was undesirable, and stock, therefore, that will never be itself desirable.

Small size, however, is not always an indication of inferiority, for small trees with a good root system and good parentage may prove to be excellent producers in the orchard. Distinction must be made between small trees and "runt" trees. The latter are of the kind that no orchardist can afford to plant.

Concerning Selected Stock

Every nursery tree is composed of two parts grown, at first, independently of each other. The root system is developed from the seedling trees as a first step in the process of propagation. When it attains a sufficient age and size, a bud or a short scion from a closely-related tree of a known variety is inserted.

With this fact in mind it may be readily understood that a tree may be lacking either because of a weakness in the root system, which weakness may be in no way associated with the top, or vice versa. The great importance of the root system is being recognized more and more, however, as time goes on, and not only is the root receiving attention from the standpoint of its ability to feed and support the tree, but also from the equally important standpoint of resistance to disease and insect pests. In this connection it is interesting to note that certain varieties and species of pears are highly resistant, and some practically immune to the attack of

(Continued on Page 20)

A Prediction

In the light of our present knowledge of this interesting phase of horticulture it is not visionary to predict that in time most of the serious insect pests and diseases will be partially or wholly controlled through a knowledge of resistant and immune stocks of the particular kinds affected. — George P. Weldon.

Heavy Producing Individual Peach Tree

The large tree in the forground, which is of the Phillips Cling variety, has produced regularly and heavily ever since coming into bearing. It has produced more than 100 pounds of fruit when the average for the orchard was less than half this amount.

Plans for a Bigger and Better State Fair

DESPITE the handicap of a transportation strike, which prevented a number of exhibitors from reaching Sacramento, and materially affected the attendance, the 1919 State Fair was a big success. Yet plans were laid even before the gates were opened upon this exhibition, for improvement and expansion of this annual event, with the end in view of making the 1920 fair far superior to any other ever held, including that of this year.

The improvements planned by the State Agricultural Society include the erection of many new buildings, with the new $300,000 Horticultural Building as a nucleus. The accompanying bird's-eye view gives an idea of the scope of the plans now being promulgated.

A new grandstand is provided, with space for restaurants underneath.

Better Accommodations

It is hoped eventually to do away with tents and sheds for the housing of the exhibits. The livestock accommodations will be concentrated. Exhibitors have complained about the separation of the dairy-cattle from the other stock exhibits.

It is also planned to erect a judging coliseum. The lack of such an arena has been a serious handicap to the work of the judges, some of whom have had to work in the alleyways between the sheds. It is proposed to place all the livestock buildings along the end of the race track. The new grandstand is indicated in the diagram, just back of the present Horticultural Building.

Separate buildings are to be provided for each class of livestock. There will also be separate units for poultry, University Farm exhibits, tractors and machinery, automobiles and trucks, industrial arts, education, automobiles, trucks and accessories, woman's building and dairy building.

The plans include considerable work on the grounds, which are to be improved according to a definite landscaping scheme. Livestock associations have passed resolutions calling upon the Legislature to furnish the sum of $1,000,000 for these improvements, while a permanent organization, known as the California Exhibitors' Association, was formed with the immediate purpose of influencing each county in the State to send an exhibit.

This year there was a woeful lack of exhibits from the South. Los Angeles County was represented, but little was seen from other Southern sections. This situation was due, in part of course, to the railroad strike; yet feeling is strong in the South for a separate fair, and no doubt considerable pressure eventually will be brought to bear for the establishment of a permanent fair at Los Angeles, built upon the 1918 "Liberty Fair" and the 1919 Livestock Show. However, it is the hope of the directors of the State Fair that a true representation can be secured next year from all parts of the State.

The County Exhibits

Yolo County won first prize in the county exhibits. Fresno received second prize, San Joaquin, third, and Kings County, fourth. The exhibits of fruits were indeed marvelous. No other word would adequately describe them. The cash prize of $600 is, of course, worth much less to Yolo County than the advertising value of being "first." It was not alone the fruits but the diversity of crops which brought Yolo "the money."

In addition to the various county exhibits, the big Horticultural Building housed instructive and interesting exhibits by the Forestry Service, the rodent control and standardization divisions of the State Department of Agriculture and the Dairy Association. The exhibit of the latter was called "the milk bar." Attractive "barmaids" served thirst-quenching concoctions, all made up of products of the dairy.

The implement and machinery exhibit surpassed all expectations and all previous showings. The California Tractor and Implement Association deserves much credit for this great exhibition. Housed in two enormous tents, and overflowing these, the well-arranged "still show" made a very strong impression upon the visitors, and according to some of the dealers was more satisfactory in many ways than the field demonstration staged earlier in the year at Sacramento. Although no plowing or field work was done, some of the tractors were jacked up and the moving parts shown in operation. Some of the newest and largest "combine" harvesters were on exhibition.

Wonderful Stock Show

The livestock show was unquestionably the finest in point of quality ever held on the Coast. The entries, although not of record number, were worthy of California's greatest pride, and would have been larger but for the railroad strike. Several of the judges gave unusually high praise to the animals which came under their scrutiny, some of the Eastern men expressing genuine astonishment and offering the admission that it would be difficult to match certain of the entries among the best herds of the East. Boats, motor trucks and express shipments were employed to bring belated entries to the show, the judging being deferred in some cases to allow everyone to be on hand.

The livestock show took on a more serious aspect than at any previous fair. The judges were all men of national fame, and their decisions were awaited with almost breathless suspense, not only by the exhibitors, but also by the crowds of genuinely interested spectators which congregated about each judging ring.

The swine show was especially strong, and the only livestock division showing heavier entries than at previous fairs. Seventeen Duroc-Jersey breeders were on hand. The Poland China breed was represented by 300 members, shown by 20 exhibitors. The largest winner was J. F. Lehman of Lodi. Fourteen exhibitors showed more than 100 "Berks." The Chester Whites made an unusually strong showing.

The Hereford exhibit brought out some of the best, but not all the best individuals in the State. The Shorthorn show, similarly, was one of quality rather than numbers.

Dairy Cattle Strong

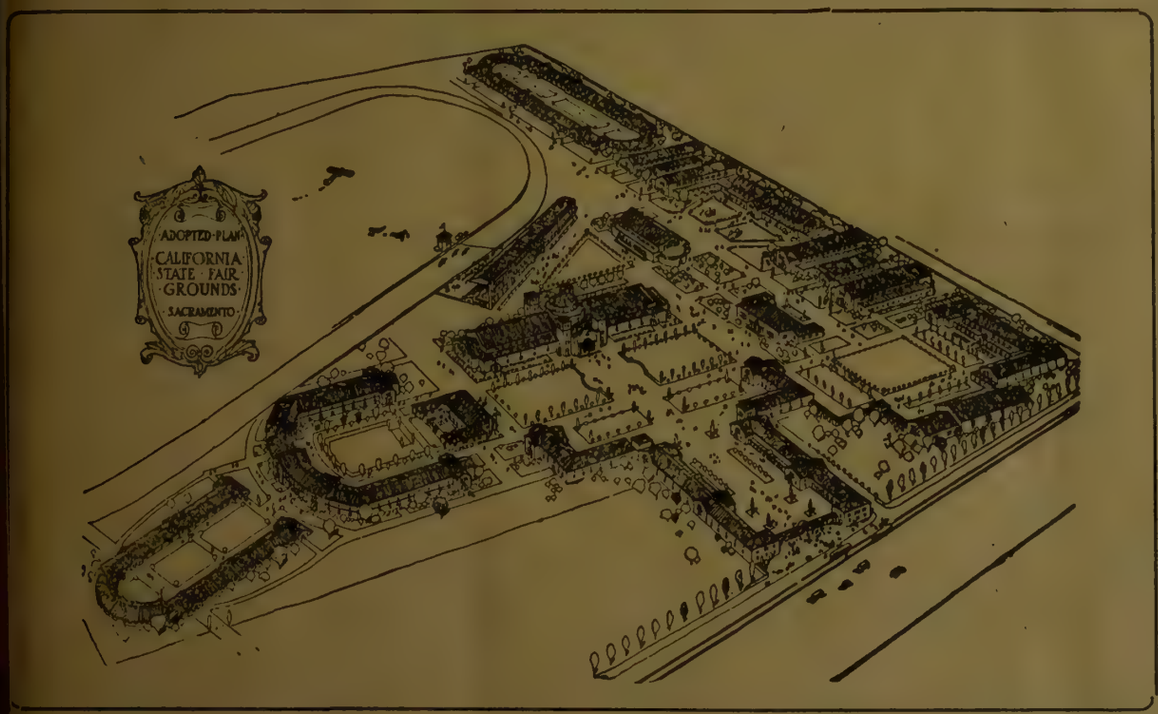
More than 100 Holsteins were entered. The wonderful bull, King Segis Alcartra Prilly, was for the third time made Grand Champion, while his get brought in a long string of prizes for the owners, the Bridgeford Holstein Company.

For the first time a good showing of Ayrshires was made, three herds arriving for the judging. There was an unusually good exhibit of milking Shorthorns.

The Jersey show was distinctive for quality and brought out a dozen exhibitors.

Although the Guernsey show was crippled by the railroad strike and other unforeseen circumstances, seven exhibitors finally arrived, and some

(Continued on Page 35.)



112 HENS 1800 EGGS

Mrs. Harper Writes: "I wouldn't be without 'TWO for ONE' for the world; my 112 hens layed 1800 eggs in 1 month."

Poultry raisers who have not given some thought to increasing their egg production this fall and winter are making a big mistake. Present indications are the price of eggs will be sky high, and if the owners of laying hens do not make every effort to profit by these conditions they will regret it later, particularly when they hear of the large profits being made by their next door neighbor. If there ever was a time when a little extra attention should be given to the poultry yard, now is the time. Do not delay. A few pennies spent wisely today will bring you back dollars tomorrow.

World's Greatest Egg Producer

"TWO for ONE" is the marvel of all egg tonics. It is the most remarkable producer of eggs ever known to the poultry world. "TWO for ONE" is making records every day in egg production that were never before believed possible. Flock owners all over the country are amazed with the results. The most experienced poultry experts say they have never seen the like of it.

"TWO for ONE" is not a mere food. It is an egg tonic in the truest sense of the term—a scientific preparation in concentrated tablet form—the result of scientific research and experiment. Every factor entering into the matter of egg production was scientifically studied.

As a result you have in "TWO for ONE" a tonic that conditions the hen for the utmost in laying capacity—that builds muscle and bone—that stimulates active functioning of the hen's reproductive organs—that insures fertile eggs and 100% hatchings—that makes the laggard lay and increases the production of active layers. A tonic that gets more eggs for you, winter and summer, than you ever thought possible.

Read These Endorsements

112 Hens—3241 Eggs
Since giving "TWO for ONE" to my hens I got 3241 eggs from 112 hens in one month. My neighbors are jealous.—Clara Tobias, Ohio.

Laid Eggs in the Coldest Weather
I used your egg tonic for the first time this winter and was truly surprised at the way my hens laid. In the coldest weather I was getting eggs every day.—Laura Higley, Michigan.

11 Hens—192 Eggs—One Month
I gave one box of your "TWO for ONE" tonic to my hens and I got wonderful results. 11 hens laid 192 eggs in less than one month.—S. L. Chase, Kansas.

Tripled His Egg Supply
Please send me two more large boxes of "TWO for ONE" at once. One for my brother and one for a cousin. I told them how the tonic tripled my egg supply and they are anxious to try it. Enclosed find $4.00.—J. P. Roberts, Missouri.

$5000 Egg-Laying Contest

Have you entered our $5000.00 egg laying contest? If not, do so right away, it's free to all users of "TWO for ONE." You not only increase your egg production but you may win one of the big cash prizes we are giving every month. Write us today for particulars.

Money-Back Guarantee

Don't take our word for it. "TWO for ONE" is sold under the distinct guarantee that if you are not entirely satisfied you get your money back. Take advantage of this offer and send for a box of "TWO for ONE" today.

Only $1.00 a box, or $2.00 for large box containing as much as three $1.00 boxes—enough for an entire season. This costs you 1-16 of a cent a day per hen, or less than 1c a dozen for the additional eggs you will receive from your flock.

Kinsella Co., 857 LeMoyne Bldg., Chicago, Ill.
Gentlemen:—I want to increase the egg-laying ability of my hens, make more money out of my chickens and take advantage of the high prices that will be paid during the coming fall and winter. So please find enclosed $..... for a box of "TWO for ONE" as checked below.

(Check opposite size wanted:)
Small Size (Including War Tax) $1.00
Large Size (Including War Tax) $2.00

This order entitles me to an entry in your $5,000.00 egg-laying contest, of which you are to send me full particulars, and my money is to be returned if I am not entirely satisfied with the tonic.

Name .....

Address .....

.....

The Goat's Milk Route to Happiness

Here is another one of those true stories of success to which the big Orchard and Farm family has learned to look forward with so much interest. And this time it is the story of a woman, written by a woman. But such of our male readers as are inclined to place the milch-goat in the pet-stock class, surely will find not only inspiration, but also much common sense, in this simple story of a school teacher who hit upon the combination that made her dreams come true.

By Herta Curme Davis

PROBABLY more successful goat-dairies, large and small, have been launched by babies than by any other agency. Which ought to prove that "anyone can do it"—even a school teacher. And, in fact, at least one "old maid school teacher" is a successful business woman today because of the milch-goat. One cannot help feeling, in view of her attainments, that anyone who raises valuable chickens, puppies, calves, rabbits or white mice, also should become a goat enthusiast. We shall let Miss Martha Ray, herself, explain her

methods and give pointers for the novice. For, although her name is not Miss Ray, in every other way she is a very genuine person. We are impressed with her individuality and independence as she pilots us around her neat suburban bungalow to her equally neat back yard goatery.

"Oh, yes" (and it is quite plain that she has enjoyed the dramatic effect of this statement many times before), "I make our living, for my mother and myself, entirely in my back yard. But, of course, anyone can do it." This is the point on which Miss Ray insists before all others. "It takes only patience," she says, "in being willing to start slowly and learn the business as you go. Of course, there's a good deal of work, which is at the same time light and within the strength of the average woman. If you haven't a back yard you can use a vacant lot." At any rate, here is the story of how Miss Ray has done it, as she told it on one such occasion on her tiny "farm."

Beginning Again

"In the beginning, neither babies nor white mice contributed to my inspiration to get a goat," she smiled. "It was my invalid mother's health which brought us West, causing me to give up my teaching position and become a nurse—and a rather discouraged one, at that, with few indications of improvement in my patient, and the knowledge that we were living up to our small capital.

"Finally, in one of our constantly changing, temporary homes, someone suggested goats to me, as a possible cure for 'what ailed us.' I remember that it was another school teacher who did me this kindness. Have you ever noticed that there seems to be a fascination about the goat business for teachers? Possibly it is because I have been in both lines of work myself that I am constantly finding school teachers, both active and retired, who are also enthusiastic goat-owners; or, perhaps it is because they really are intelligent and therefore intent upon adding sufficient to their meager incomes to make both ends meet. But no doubt many who now own goats are thankful that an unappreciative public and the H. C. of L. forced them to take up their new hobby.

"Perhaps I was unusually fortunate in my first purchase. I have heard of more than one prospective booster for this new industry who became a disappointed disparager instead, because he was 'stung' in buying the first goat. In fact, the unstable conditions which have been brought about by the quick development of the goat business, with consequent lack of standardized values, represent a condition which, it seems to me, all goat breeders should attempt mutually to improve. And, at the same time, this very situation presents an excellent oportunity for the individual goat raiser not only to help bring about better general conditions, but also to build up a secure footing for himself."

But, as Miss Ray explained, all that came to her gradually. At first the immediate accomplishments of Myra, her "missionary" goat, absorbed all her interest. And what Myra did accomplish was of great importance in a number of ways. The curing of a chronic invalid is so common an occurrence now, when the goat is enlisted in treating the case, that there is no need of going into details. But, in each home where it occurs—and every day are added new ones—the miracle is just as wonderful as though it had never before happened.

"That is like babies, too, isn't it?" asks Miss Ray, earnestly. "Common as they are in this world, every one seems infinitely wonderful and precious. And when they come, only to drift away again, with all who love them standing helplessly by—well, maybe you think all this is just foolish sentiment, but right at this minute it is meaning desperate tragedy in homes all over this country. And if you once experience such a tragedy, and then the miracle comes to you, too, as a very poignant solution of not only your own but many other people's troubles, it isn't at all unnatural that you immediately get into the procession, shouting.

Contagious Enthusiasm

"You just have to tell people about it, at the very least. And in most families where this has happened, nobody wants to give away the lifesaver that brought it all about. Next, however, someone else's baby, or invalid, or convalescent, who will not respond to ordinary treatment, makes a deep appeal to you, and you have to share your precious supply of health-giving milk. Then, you get another goat—and you're off! That is the way most of the people who are now in the business to stay made their start, and one of the big reasons why they must stay—the demand is so insistent."

Sanitariums and hospitals the country over are adopting goat's milk as the one restorative in many kinds of digestive ills. Among the reasons is the very important one that goat's milk forms a much smaller and more flocculent curd in the stomach than does cow's milk, a fact adding greatly to its digestibility. When you realize that some eminent authorities lay the entire cause for the superiority of buttermilk and soured milk, prescribed for many dietetic difficulties, to the forming of a smaller curd, you can see that the point is an important one. Of course there are other reasons for the general acceptance by physicians and other authorities of goat's milk as highly valuable in the struggle for health, but I won't go into all that now. Myra's milk worked the miracle for the Ray family, and that was the important thing at the time. She converted them very promptly, and that's why they always call her, "Myra, the missionary."

El Chivar's Geneva

Internationally known as Grand Champion doe at the P. P. I. E. Her record of 2124 pounds of milk for 10 months' yield set an early example for present-day high producers, and brought fame to her breeder, Winthrop Howland.

"As just a business proposition, too," points out Myra's owner, "I soon began to see that she was a good investment. We had been buying milk at 14 cents a quart, and she averaged two quarts a day for ten months after coming fresh. At the same price we had paid for ordinary milk, this would have been a production of $84 worth of milk in that time. I counted her cost of upkeep at $3 a month for twelve months, although I kept both her and her doe kid on that amount for the greater part of the time. This very conservative figuring gave me a profit of $48 for the first year, without counting the offspring.

Profits From the Start

"The doe kid, Nellie Gray—which shows that her derivation was rather shady, and that her color barred her from aristocratic aspirations—cost me a $5 breeding fee, and we will charge her up with the full $54 for her first year and a half of maintenance, though it did not even approach that figure. At the end of that time she proved herself a three-quart doe with her first kid, and I had ample opportunity to sell her at $75 without her doe kid, which was better than the mother. (I kill all male kids at birth.)

"Since I paid $50 for Myra in the first place, and the first year more than brought my money back in actual cash—as I sold the milk my mother did not need readily enough at 15 cents a pint and 25 cents a quart—I considered the investment as a good one indeed, from the standpoint of financial returns alone. I don't know of many business concerns that pay as much over 100 per cent on the original investment each year."

Of course it took work, the teacher admitted, and she did not count their own time, but this is offset by the fact that their eyes were opened to opportunities formerly lacking. They enjoyed the work and received real returns in the pleasure found in it over and above all financial considerations.

The first year they managed to keep the goats in the back yard without any expenditure for equipment. An old chicken house was slightly remodeled to serve as a shelter and the goats were staked on an adjoining empty lot for exercise and such green feed as they could forage.

The second year, with Nellie Gray's doe kid to add to the little goatery, they made improvements. The back half of the lot was fenced in as a corral, and they commenced to build a set of runways and stalls, to which more have been added year by year. In her garden Miss Ray started

(Continued on Page 38.)

Miracles?

"Before I tell you how far 'Myra,' our missionary goat led us along this route, I wish to say just a word about the 'miracle talk' that one hears everywhere among goat breeders. You probably regard it as exaggeration, but it is the gospel truth!

"It is a fact established at no less a place than the Rockefeller Institute in New York City, and published by the United States Government for all to read, that, of a group of babies, none of whom were thriving on any food that had been tried, and some of whom had been pronounced in the last stages of malnutrition, 17 out of 18 were restored to health by goat's milk!"—The School Teacher.

Bettie De Lait

An unregistered six-quart doe, bred by J. L. Farmer of Pasadena. This breeder has developed one of the best herds of grade goats in the South. There is a big demand for heavy-milking utility grades.

Dehorning Adds Value to Cattle

The benefits include safer handling, less injury to meat and hides, and uniformity in appearance. The writer of this article has made a special study of methods and equipment and offers some practical suggestions based on both observation and experience.

By F. W. Farley

Animal Husbandry Division, Bureau of Animal Industry, United States Department of Agriculture

(Written Especially for Orchard and Farm)

THE practice of dehorning cattle has a number of advantages which the cattle feeder can not ford to overlook. It makes the cat- e more easily and safely handled in e feed lot and each animal is as- red a more nearly equal chance at e feed trough. Also it renders the imals less dangerous to attendants. urthermore, the bruised condition of esh, and the torn hides caused by ttle goring each other in the feed ts and in transit to market is done way with, as well as excessive shrink- e in transit. Dehorning also adds iformity to the appearance of cat- e and thereby increases their value.

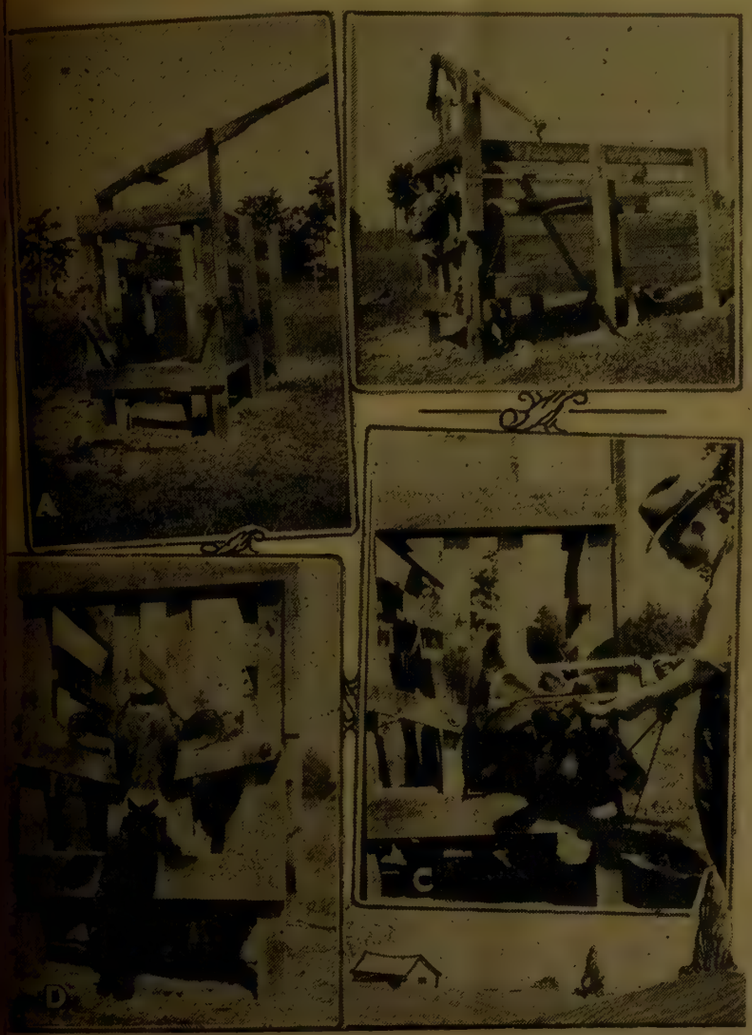
Development of horns may be pre- nted when the calf is only a few ys old by the application of a caus- c to the undeveloped horns. Or, hen the horn is either partially or holly developed it may be removed sawing or clipping. These latter erations may be performed any time ter the animal is past four months age.

Directions For Use of Caustic

For preventing the growth of horns, ther caustic soda or caustic potash ay be used. The chemicals offer a mple and easy method of preventing the growth of calves' horns, although more pains must be taken in using caustic than is necessary in cutting off the horns with a saw or clippers. To obtain best results with caustic the operation should be performed when the calf is from four to ten days old. At this age the knob or "bud" is only loosely attached to the skull and appears more as a part of the skin. The hair should be clipped off around the horns and vaseline applied around the edge of the hair to prevent the caustic from spreading to the skin.

As a protection to the hands the caustic stick should be wraped in paper with one end exposed. The exposed end is then slightly moistened and rubbed on each horn alternately three or four times, allowing it to dry each time before applying again. The stick must not be so wet that the solution from it will run down the side of the calf's head. In rainy weather the calves treated should be kept under shelter, because the rain will wash the caustic down over the face, causing severe burns. When the caustic is properly used, a scab will form over the bud and drop off within a few days. A successful operation

(Continued on Page 28)



(A) Front view of a workable dehorning chute with head-clamp open.
(B) Cow in place with head-clamp closed.
(C) Correct position for removal of horn.
(D) Head of animal after horns have been removed.

"Ye Olde-fashioned Country Faire"—

The Los Angeles

LIVESTOCK SHOW

Exposition Park
October 18 to 26

—mammoth livestock exhibit.
—agricultural display.
—horse racing daily.
—stock sales.
—horse show.
—amusements.
—dog show.

$55,000 in premiums.

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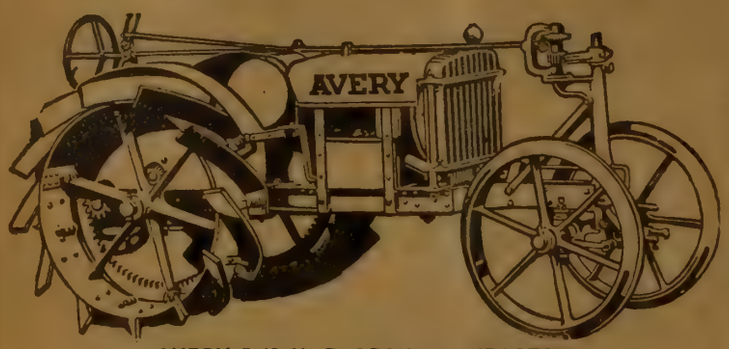
Pearl Oil is the ever obtainable fuel, refined and re-refined to be pure and clean burning. Order by name—Pearl Oil.

We recommend Perfection Oil Heaters.

STANDARD OIL COMPANY
(CALIFORNIA)

AVERY



AVERY 5-10 H. P. ORCHARD TRACTOR

ORCHARD TRACTORS

8-16 H. P.
6-Cylinder—$895.00

5-10 H. P.
4-Cylinder—$775.00

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That is especially designed for California orchard conditions; that will pull a 6-ft. double disc or two 14-in. plows—

And you buy one without first seeing the AVERY 6-Cylinder 8-16 H. P., you will, of course, not know what you have passed up, but if you do see it before buying—well,

You'll Buy The AVERY

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Tractor Demonstration Lessons

(Continued from Page 3)

and chopped; bean-straw was ground and elevated; water was pumped; wooden laths were fed into the ensilage cutters and chewed up with no apparent difficulty; the atmosphere was thoroughly sprayed, and through it all the motors hummed merrily. There can be no doubt in the mind of the farmer who attended the 1919 meet that the steel horse is by no means merely a creature of the field. It seems to us that this was the most valuable feature of the entire show—the demonstration of the value of the tractor for operating machinery. No case of overheating developed. The motors of the various makes of tractors seemed easily to withstand the strain of stationary operation. One tractor, equipped with a special mower attachment, ran backwards in a circle during the entire show. Unattended, it plugged steadily along, the motor running very slowly. Several machines were thus allowed to run alone in a circle, the wheels being set at the desired angle.

The very fact so strikingly brought out at the demonstration; namely, that the tractor is no longer an experiment or a curiosity, but a standard and up-to-date method of securing maximum and economical production, may account to a great extent for the slim attendance. Those who came were, in most cases, already sold on the "tractor idea," but facing the necessity of making a choice of type. And those not directly interested in the purchase of a tractor did not attend, because it is possible for them to see tractors in operation from the boulevards during any ride into the country.

A Giant of Power

The "Holt" 75 H. P. pulling ten 17-inch discs. The "execution" done may be seen in the lower illustration. The furrows, in the hard, adobe soil, were from 13 to 15 inches deep.

Owners Help Sell

The presence of many tractors on ranches in the vicinity of the demonstration field, and the diversity of crops produced in Los Angeles and adjoining counties, were of great assistance to the tractor men in making sales. One dealer closed two sales by taking the interested visitors to a not-far-distant ranch, where an enthusiastic owner became the real salesman by demonstrating his own machine in an orchard or field similar to that owned by the "prospect."

"Yes, but will it handle such-and-such an implement on a hillside in an orange grove?" inquires a visitor.

"Jump in my car and we'll run out here to Smith's ranch and let him answer the question," replies the salesman, and if the product is honest and the owner pleased, the result is almost a foregone conclusion.

This idea brings out an interesting suggestion. It is believed by many students of the tractor situation that the demonstration will eventually resolve itself into an "almost still" show, with eager salesmen and waiting automobiles to transport the interested visitor to a point where any desired conditions could be shown.

This would involve disadvantages, of course, for any new dealer, whose objections could be met by the establishment of a big field, where demonstrations similar to those held in the past could be conducted by those desiring them. It has been suggested that next year's demonstration be even more concentrated as to exhibits, with no allotment of ground at the tents but a large demonstration field adjoining the general show-grounds where the tractors could be kept for such field-work as was required in order to make sales.

New Ideas Advanced

It has also been suggested that some amusement features be included so that the farmer would be induced to make a general holiday of his visit to the demonstration and bring his entire family. A picnic-grounds with camping accommodations might be appreciated by "out-of-town" visitors, while "movie" shows, and possibly some amusement concessions might profitably be included, some tractor men believe.

The development of the demonstration idea will be limited principally by the factor of expense. A show more elaborate than that staged this year would involve enormous expenditures. To say that $150,000 was required to put on the 1919 demonstration is undoubtedly to make a conservative estimate. The dealers will not "spread themselves" much further than this without assurance that much greater attendance may be secured.

The greatest praise is due the members of the Association, the special committees and the manager, E. M. O'Neill, for the clean-cut manner in which this year's show was presented. Everything went off smoothly, every convenience and comfort was provided, no hitch occurred at any point.

Big Truck Exhibit

The exhibit housed in the big accessory tent was unusually complete and interesting. The range of exhibits included motor trucks, tires, rims, piston rings, pumping outfits and engines, tire repair outfits, cooling systems, special carburetors, electrical equipment, lubricating systems, oils, greases, fire-extinguishers, electrical household machinery, farm lighting plants, seeds, oil burners and spark plugs.

Fourteen makes of trucks were shown. It has been suggested that next year the truck dealers be invited to participate and that the show be called a "truck and tractor

(Continued on Page 26)

TIMKEN TAPER TRIUMPHANT

Why did the Wallis Tractor Company put Timken Tapered Roller Bearings in rear wheels, at the differential and in the transmission of the "Wallis Cub, Jr."?

Why have 135 tractor engineers—many of whose tractors were not new in the industry, but had formerly incorporated other bearings—adopted Timken Bearings within the past two years?

There is but one possible answer to both questions—it is because of the correctness of the Timken tapered principle and the ability of Timken Bearings to resist wear has been proved by actual experience in the tractor. Facts—not what engineers say Timken Bearings ought to do under certain conditions, but what they actually have done—caused the Wallis Tractor Company to put Timken Roller Bearings at hard service points in place of other bearings. Facts, not theory, are responsible for the installation of Timken Bearings in one make of tractor after another.

There's more about bearings in the booklet "Timken Bearings for Farm Tractors." Write for your copy.

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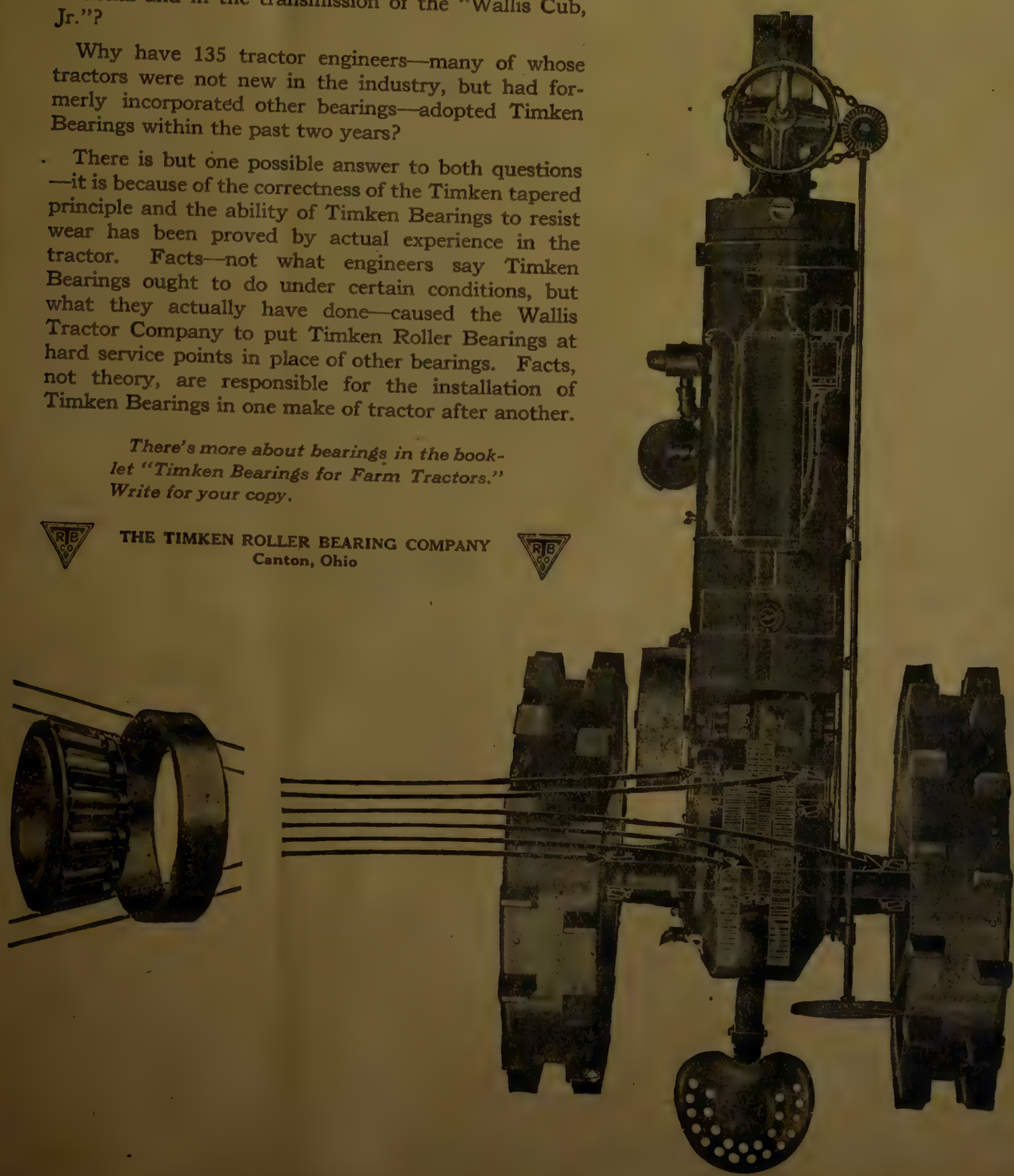

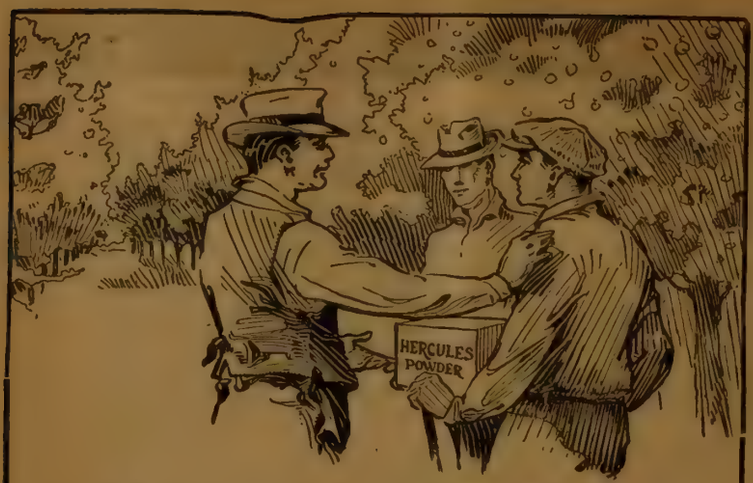

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Concentrating the Hay Crop

Since "baled breakfast-food" is no longer a curiosity upon the average American family breakfast table, it would seem that there is nothing new in the way of baling-machinery. Yet an enterprising inventor is now turning out a press that serves up Bossy's and Dobbin's meat in biscuit form. In fact, there's a lot to know about hay-presses—so much that Uncle Sam has just issued a fat bulletin dealing with all phases of the subject. If you want more information than is contained in the high-spots touched in this article, write the Division of Publications, U. S. D. A., Washington, D. C., and ask for free Farmers' Bulletin No. 1049.

THE hay-baler, while comparatively a new development in the line of farm machinery, already holds a place of paramount importance—especially here in the Pacific West, where so much alfalfa is shipped and marketed. And, as Uncle Wiseacre pointed out in a recent issue of Orchard and Farm, "buyers ain't payin' no real money fer air-spaces."

While color and quality are first considerations, hay is graded largely according to the manner in which it is baled. Bales of uniform size and of neat, attractive appearance bring top prices, other conditions being equal, while ragged, unsightly bales are penalized. In baling hay for market, various practices are in operation; some are followed unconsciously or in order to avoid extra work, while others are followed deliberately with intent to deceive the buyer, and tend to lower the market value of hay in the bale irrespective of its actual quality.

In other words, the baling of hay is in itself a science of many angles and one deserving the serious consideration of all hay-producers. It is believed that many hay growers who now hire custom balers would do well to give careful consideration to the advantages that may accrue from having a press on the farm.

Types of Presses

Presses are divided into three classes, according to the manner in which the bale is made—loose or box presses, perpetual or continuous presses, and round-bale presses. These machines are operated either by horsepower or by steam, gasoline or kerosene engines. The perpetual press, which is the most popular type in all sections where hay is grown for market, features continuous pressing; that is, hay is fed into the press, a forkful at a time, and the finished bale is discharged from the opposite end of the bale chamber without stopping the press. If the hay is properly fed into the press it will be easy to separate the bale into as many portions for feeding as there are number of charges in the bale, which varies from 6 or 8 to 15 or 20.

The first box presses were operated by hand, but now they also are by horsepower or by engines. The box press always makes bales having the same or "even" length, a valuable feature when loading. Bales of even length can be made by a perpetual press also, but not easily as with the box press. A disadvantage of box-pressed hay comes from the difficulty experienced in separating the bale into small portions for feeding, because the hay is generally more or less tangled or matted together.

Horse-Power Presses

One-horse, perpetual presses, made by reliable concerns, are capable of turning out the same kind of bales as are made by the regulation two-horse presses. They are designed for the farmer who has a small acreage of hay, and they can be especially recommended for the small hay-grower who he is in a section where little hay

(Continued on Page 22)

The "Biscuit" Press

One of the more recent types of presses makes a cylindrical bale, bound with binding twine and having an air space running lengthwise through its center. This press was so designed that hay baled from the windrow could cure out after it was baled, the hole in the center being intended to allow air to circulate through the bale and prevent heating. This bale is not as easily torn apart as the continuously pressed bale, it being necessary to chop or split it lengthwise with an ax or other edged implement. When round bales are fed in open bunks or on the ground in the feed lot, however, they are not opened; the animal pulls out the hay a mouthful at a time. It is claimed that this method of feeding the hay prevents waste.

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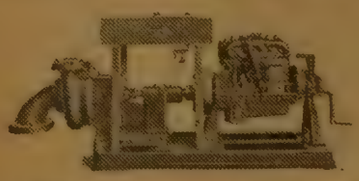

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A POST CARD TO THE SECRETARY WILL BRING A CATALOG.

Concentrating the Hay Crop

(Continued from Page 12)

grown and where hay-presses are scarce and hard to hire. The only objection to this type of press is its small capacity for daily production. If the prospective purchaser is in doubt as to which size to buy, it would probably be better in many instances for him to buy the two-horse press. The one-horse press can be used to advantage if hay is baled from the stack or barn at a time when there is no urgent need to do other farm work.

Large hay growers and shippers who buy and bale quantities of hay generally use power presses. These are in common use in sections where the usual practice is to bale hay from the windrow or the cock. They are sometimes used in preference to the two-horse type on alfalfa hay farms, even where the hay acreage is comparatively small, say from 50 to 75 acres, for the reason that they will bale hay about twice as fast as it could be done with a two-horse press, thereby greatly lessening the danger of injury to hay due to bad weather.

As power to drive hay presses, the steam engine, portable or self-propelling, has been almost entirely superseded by the gasoline or kerosene engine or tractor. With a gas engine there is no need for an engineer and a water hauler. A few owners employ an engineer when doing custom baling with a fast-working crew, because he keeps the engine going and saves expensive loss of time on the part of the press crew. When the crew is hired by the ton the men are not paid for time lost on account of a breakdown, and in such cases engineers are not often employed. Usually one of the press crew looks after the engine when it requires attention. On farms where tractors are used, if the tractor is not needed for other essential work when it is time to bale hay, the belt power press should ordinarily be used, since it costs less than the motor press, and since it would not be good business to use a motor press while a tractor stands idle.

FARM MANAGEMENT

Is the foundation stone on which is built the great structure of agricultural production. Good soil, favorable climate, big yields and active markets are as naught without good management. Recognizing the fundamental importance of this branch of food-production, Orchard and Farm has arranged for a comprehensive series of articles to be written exclusively for this magazine by Professor R. L. Adams of the University of California. The first article will appear in an early issue. You can't afford to miss this helpful series. Watch for this big feature. If your subscription expires soon, do not be subjected to the annoyance of having your paper stopped right in the midst of the series. Send a dollar NOW and your subscription will be extended three years from date of expiration.

Thorough study should be made by the prospective buyer, of the important features of power presses, the difference between the light-duty and heavy-duty presses, the longevity of the press, as well as facts about the economic operation of these presses. The capacity of the press depends, to a large extent, upon the skill of the crew operating it. The average power press should bale from 20 to 30 tons in a 10-hour day. The capacity of a power press under average conditions is about twice that of a two-horse press.

The weight of perpetual-press bales of standard sizes varies considerably. Small bales made by the 14 by 18 and the 16 by 18 inch presses run from 60 to 100 pounds, medium bales from 100 to 150 pounds, and large bales from 150 to 250 pounds. By proper adjustment of the tension device the weight of perpetual-press bales may be easily controlled so that uniform bales of almost any desired weight, within the limits just mentioned, can be made. Box-press bales may vary considerably in weight, depending upon the skill of the feeder in estimating the amount of hay to feed into the press for each charge, as box presses have no tension device to regulate the compression.

In shipping baled hay it frequently happens that it is not possible to load to even the minimum weight with light-weight bales, if the car is of the older and smaller type. In some instances it is impossible to load the minimum weight into a car with bales weighing 60 to 70 pounds, whereas, if the same-sized bale contained from 90 to 100 pounds this difficulty would not be experienced. It is important to make bales that will at least load cars to their minimum weight, provided a serious discrimination in price does not result from their being overweight. In a few instances the trade will now take a heavier bale than formerly and pay the same price a ton as for the lighter bale. The feeding value of hay is not impaired in the least when it is tightly baled, and the trade is becoming educated to this fact.

The farmer should also study in detail the baling of hay both from the barn and stack. Suggestions as to the location and operation of the press in the barn, field, and stack; duties of the press crew; wiring and tying bales; pitching to the press, and size and management of baling crews, should be carefully considered.

According to investigations of the United States Department of Agriculture, the cost of baling prairie hay from the windrow, with the power-press, amounted to 98 cents a ton, while the cost of baling with a two-horse press was $1.67. In an alfalfa-producing section the cost was 79 cents for baling with the power-press from the cock and $1.04 for baling with the horse press.

The pre-war price charged by custom balers was from $1.50 to $2 a ton. When the minimum rate was charged the hay grower was sometimes required to furnish enough pitchers to deliver the hay to the feeder. In some instances the hay grower also boarded the crew. Within the last year or two the rate for baling hay has been considerably increased. A charge of from $2.50 to $3.50 a ton is not uncommon in many sections at present. This price may or may not include the cost of the wire and of getting hay to the press.

Economy of Buying a Press

The advisability of buying a hay press depends upon the amount of hay to be baled yearly, the likelihood of being able to obtain a crew when needed, and the rate charged by those making a business of doing custom baling. Whether it will pay the grower to own a press depends upon whether the total cost of baling, including labor, repairs, interest, and depreciation, is less than the rate charged by the custom baler.

Many purchasers of baling outfits have paid for them by doing some custom work when their tractors would otherwise have been idle. A little work for the neighbors will frequently bring in sufficient income to permit of the ownership of a baling-outfit.

A TRAGEDY?

It is high time somebody was making an investigation to learn who killed all the dead furrows!

Forage Crops on Range or Ranch

One of the "livest" subjects of the day among stockmen is that of improving the range and providing more feed for their animals. The writer of this article has conducted some extremely interesting experiments with various new and old plants, and believes that within the next few years feed-shortage will be unknown among those stockmen who are willing to "insure" themselves against loss by "farming the range" or by growing quantities of feed on their own lands.

By H. L. Musser

ONE of the greatest handicaps that has confronted stockmen desiring to raise pasture plants is the great difficulty in getting a good stand in sowing fine grass seed.

Probably the most satisfactory solution of this problem is that worked out by J. A. Renfrew, whose experiments with Rhodes Grass near Niland are described elsewhere in this issue. Briefly, this is the system advocated by him:

Plough and thoroughly pulverize the soil; make as level as possible and grade it to a fall of 12 inches to a thousand feet. Sow the seed broadcast both east and west and again north and south. After the seed has been sown drag the field in straight lines from the higher toward the lower side with an ordinary drag, having nailed to the bottom, three feet apart, pieces of 4 by 4, beveled at the forward end. This makes small irrigating ditches. This is called the corrugating system. Allow water to flow slowly and continually through the ditches each day until the seed has sprouted and the grass becomes well established, after which time apply the water only when needed.

A number of the plants with which we have experimented, however, are propagated from canes. Notable among these are Napier Fodder, discussed many times in these columns, and Merker Grass.

One of our most remarkable discoveries is apparently a cross between Sudan and Sorghum, which we have called the "Wonder" Forage Plant. This remarkable plant was first discovered during the summer of 1916 on the ranch of A. L. Benedict in Riverside County. It appeared as a wild seedling or cross. Mr. Benedict realized that he had something very unusual and, saving all the seed from the one plant, sowed a small experimental plot the following year. With the seed from this plot a tract of ten acres was sown last year. The seed is similar to that of amber cane, while the gigantic growth resembles that of Sudan Grass. It stools from six to forty full-sized stems, while separate branches grow from each stalk, forming seed-heads.

The "Wonder"

Forage plant, at 60 days' growth. When matured for seed or silage it frequently attains a height of from 14 to 18 feet, and stools very heavily.

The stems are succulent and sweet, like those of saccharine cane, but not dry like those of non-saccharine cane. It is greatly relished by stock, and may be fed shredded or as ensilage. A. J. McConnell of Lankershim, Los Angeles County, reported, upon experimenting with this plant, that when he had fed his cows green alfalfa, cocoanut and cotton meal, the butter fat production was 4.2 per cent. Upon changing to straight green "Wonder" plant, however, he raised the butter fat percentage to 4.6, without using any other feed. This plant is an annual, producing an enormous tonnage, and is of course of interest to the dairyman or farmer more than the range man.

Our experiments with Elephant or Napier grass and Merker grass have shown both to be rank-growing, heavy-producing perennials, able to withstand mild frost. Merker resembles the Elephant grass in general characteristics, but seems to have broader leaves, more succulent stems and joints growing more closely together. (A number of investigators have reached the conclusion that Merker and Napier are different strains of the same plant, each exhibiting varying characteristics under different conditions.—Ed.)

Our experiments indicate that a very superior silage may be made from Elephant or Merker grass, mixed with the Wonder Plant, as the former are non-saccharine and the latter adds the desirable sugar content to the ensilage.

The Rhodes grass, such as that grown by Mr. Renfrew, is indeed a remarkable plant. It is known in Florida as the "East Coast Grass." A number of Texas farmers have had very good results with it. Following are some reports from these men:

H. C. Harding, McAllen, Texas: In answer to yours about Rhodes Grass. Yes, I have been experimenting with it for two years. I have kept four head of cattle on the acre constantly, but kept seven head during May and June. On irrigated grass 1000 to 1500 pounds gain can easily be made per acre.

E. E. Evans, Mercedes, Texas: Sowed nine acres March, 1914, and seven acres September, 1915. Will pasture three head of stock per annum per acre or cut eight tons of hay. Excellent hay; unequaled pasturage. Stock will walk through alfalfa and graze on Rhodes grass. Drouth does not kill it. It is excellent for winter pasture. Hogs thrive on it at the rate of 25 per acre.

R. L. Gregory, McAllen, Texas: It is a good grass for winter, though it does not grow so rapidly in winter as in summer. I have pastured 12 head of stock and 300 hogs all the year on 16 acres and they could not keep it down. I cut this 16 acres three times and sold all told $540 of hay. I now have 40 head of cattle and 300 hogs on it and hope they will keep it down. It is a wonder and the greatest permanent pasture grass ever introduced in any man's country.

George W. Dewey, Kingsville,

(Continued on Page 18)

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Subsoil and Chisel While the Ground Is Dry

Subsoiling is coming to be recognized as the most successful method of opening the ground to receive the winter rainfall and conserve the moisture.

Ranchers who subsoiled last year have reaped the benefits in increased crops over those who used the old methods.

One rancher of Imperial Valley reports a gain from six sacks of grain per acre to twenty-seven sacks; many others are reporting equal gains.

Our Automatic Subsoiler is a great improvement over the old style hand wheel and screw lift, as it eliminates all physical effort in raising it out of the ground. We also build the three standard subsoiler with the automatic lift.

Write for our booklet on Deep Tillage vs. Old Methods, which contains personal letters from those who have subsoiled or chiseled their land, and have increased their yield from 100 to 150 per cent.

The Killefer Manufacturing Company
Box 156 Arcade P. O.
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YOUR OPPORTUNITY

$136.00 IN PRIZES

Would you write a letter for $25—or $20—or even $5? In order that as many as possible of our subscribers may take advantage of our **Prize Contest,** we have decided to extend the offer to **JANUARY 1ST.**

Write us about any time or money or labor-saving method or scheme which has made your ranch more productive or your management more efficient. Write us about your experiments and conclusions with fruit, poultry, field crops, livestock, garden or, in fact, any branch of food production. Tell what you did and how you did it. Send photographs or diagrams if they will help to tell the story; they are not required, however. We want plain, unvarnished, straight-from-the-shoulder facts that will hold inspiration for other readers and help them to make more money and improve their living conditions.

PRIZES

FIRST	$ 25.00
SECOND	20.00
THIRD	15.00
FOURTH	10.00
FIVE PRIZES of (each)	5.00
SEVEN PRIZES of (each)	3.00
TEN PRIZES of (each)	2.00
TOTAL	$136.00

You don't have to be a writer to enter this contest. Every farmer is an inventor and experimenter. Just take a few minutes to set down on paper some of the short cuts or good ideas that you use in your everyday work and you may win a cash prize.

Write on one side of paper only, and sign name and address plainly.

Any number of contributions accepted from each contestant.

Articles limited to 1000 words, but the shorter the better, if you tell the whole story.

Address Editor, Orchard and Farm, Examiner Building, Los Angeles, and mark your letter "For Helpful Hints Contest."

The best contributions will be printed. All will be examined at the end of the stipulated period by a committee of competent judges, authorities on different branches of agriculture, and checks will be mailed to the winners, whose names will be announced in the issue following. Why not do this NOW?

ADDRESS ALL CORRESPONDENCE "HELPFUL HINTS EDITOR,"

ORCHARD AND FARM EXAMINER BLDG., LOS ANGELES.

EDITORIAL DEPARTMENT OF ORCHARD AND FARM

~ TIMELY TOPICS AMONG FARM FOLK ~

J.C.Knollin, Editor

An Informal Chat

IF it were a crime to borrow ideas this world would not have progressed so rapidly. Inspiration comes partly from the soul and partly from observation of the attainments of fellow-beings. Orchard and Farm likes to publish true stories of the accomplishments of real people. We believe that they hold the greatest interest, inspiration and helpfulness for our readers.

But to discuss the success of a certain agriculturist and to not tell how he accomplished it would be like offering food without the means of eating it. Therefore, it is our aim to tell the WHOLE STORY, so that the reader may compare methods and adopt for his own use the NEW IDEAS that he may acquire. Apply the "acid test" to any number of Orchard and Farm. How many valuable hints do you obtain from it?

We believe in the kingship of the tiller of the soil. To him is due the best that life affords. And if, each month, we help him in the solution of his problems and at the same time sow in his happy household the seeds of fellowship, good-will, wholesome entertainment and cheer, then we shall have taken one more step towards our goal.

Please feel free to advise or criticise or ask for information. We are here to serve and help. It is our ambition to deserve and keep the good-will and respect of our subscribers.

Is This Co-operation?

AT LEAST three national farmers' organizations now conduct offices at Washington. Each of these represents a number of national and local associations; their membership aggegates millions.

Unfortunately, instead of pulling together on all issues affecting the welfare of farmers throughout the country, the officers of these associations have in several cases shown distinct evidence of friction and jealousy.

These seems to be little doubt as to the right and necessity of agricultural representation at the national capital. But it is certainly to be deplored that these various organizations cannot combine into one great bureau, capable of building and maintaining a truly representative Temple of Agriculture, where every national association could maintain its headquarters and all work in harmony for the advancement of the common welfare.

Agricultural co-operation should find its highest expression in the work of its exponents at Washington. And surely the present situation does not offer a good example to the members of the various small associations represented. We must have co-operation of co-operators!

Better Rural Credits—A Crying Need

THIS is the opportune time for agriculturists to "put over" legislation providing for more liberal and elastic rural credits!

Now, with the entire country aroused over the excessive cost of the necessities of life, the situation is right for this great advance. It is quite generally conceded that the most hopeful solution of our present great burden lies in greatly increased production. And wherever food is the important factor, this, of course, means primarily agricultural production.

Greater agricultural production, however, depends principally upon credit. And with the exception of the local banker, whose operations are governed largely by the personal equation, there exists at this time no adequate agency for assisting the landless but able and willing farmer. The Federal Farm Loan System is all right as far as it goes, but it provides no equipment for emergencies and holds out no hope for the landless man.

Various communities successfully met the situation during the war by furnishing funds through the co-operation of groups of business men or capitalists. Notable among such experiments is the so-called "Stanislaus plan," carried out in this State. There are now before the Banking and Currency Committees of Congress several schemes for the filling of this long felt want. One of these is the "Millikin" plan, which contemplates the establishment of a system whereby the credit of a community can be massed for the uses of the individuals of that community. It is being urged by agricultural interests that a subcommittee of the existing Congressional committees be appointed for special consideration of this and other suggested schemes.

Now is the time to "put it over," and thus to benefit not only yourself and your fellow-farmers, but likewise the entire country, which is suffering under the burden of excessive food costs. Every individual and every agricultural organization should bring pressure to bear upon the proper authorities and representatives to the end that this much needed reform shall be no longer delayed. Write to your Congressman or bring up a resolution before your co-operative association. Quick action will bring results.

If Federal action cannot be secured, the other States will have to follow the example set by California with her Land Settlement scheme. Some economists hold that only by State legislation can the problem be solved. Be that as it may, California is going right ahead with her plans, hoping that, in the meantime, Congress will recognize this great national need, and take appropriate action.

WHERE DO YOU GET THAT "PROFITEER" STUFF?

It will take him a long time to balance the scales!

Selling Horse Meat

HANDS are thrown up and voices lifted in horror when the announcement is made that horse meat will henceforth be sold under Government supervision in this country for human food. Yet some of the same persons who find occasion for such loud remonstrance consume with apparent relish atrocious combinations of foods, far more injurious to their stomachs and dispositions than good, clean, Government inspected horse meat.

It is well that this step has been taken, for one of the first effects undoubtedly will be the slaughter of thousands of head of small, worthless wild range ponies which consume enormous quantities of forage, and consequently detract just so much from the nation's beef and mutton supply. In times of drouth and range shortage, especially, it is necessary to conserve every blade of grass and browse for our more highly-developed meat animals.

Congress has appropriated $100,000 to carry on the work of inspection during the fiscal year ending June 30, 1920. The regulations for sale of the meat will be strict, and the volume of trade will, of course, depend on supply and demand.

As to supply, in addition to the worthless wild ponies prevalent throughout sections of the West, there will be slaughtered thousands of inferior animals in other parts of the country for which no remunerative market previously has existed. The demand, of course, will come largely from the foreign element, many of whom are already accustomed to this meat. Furthermore, exports are expected to reach considerable proportions.

Elimination of inferior horses not only will save feed for more worthy animals but also will add hides to the leather supply and increase meat stocks. However, it is not anticipated that the volume of trade will become sufficient seriously to affect the livestock market. Therefore stockmen and farmers generally are pleased to know of the stand taken in this matter by the Department of Agriculture, and feel that the marketing of horse meat will be of real economic benefit to the country.

ORCHARD and FARM

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CONCISE CONTRIBUTIONS

On practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling why, when, where, who and how much.

About Measurements

THE United States Department of Agriculture uses the bushel as the unit of measurement in crop reports. The use of the sack as a unit is strictly a local, Pacific-western custom. With the advent of bulk handling of grain, there will be less reason for thinking and bartering in terms of sacks. In the intermountain States ("between the East and West") grain and most other products of the soil are sold by weight, the hundredweight being standard.

The department adheres to the "bushel" system because, it maintains, two-thirds of the citizens of the United States have been taught to think and trade in terms of bushels, and because bushelweights have been standardized by law, whereas the sack has never become so established.

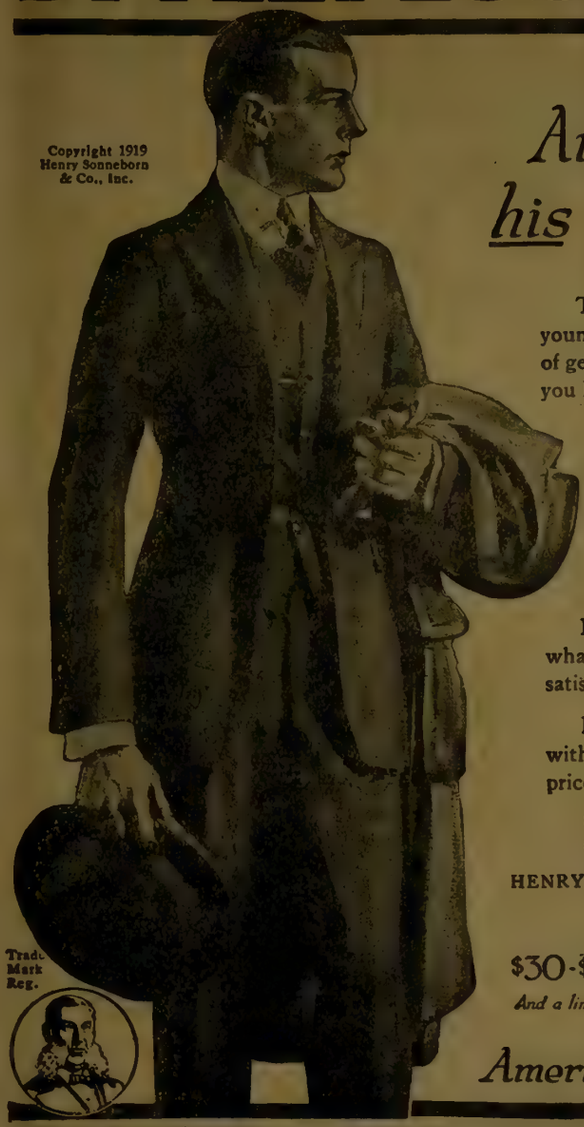
No doubt the time is soon to come when both terms will be supplanted by the adoption of the meter-liter-gram system, now universally used by all civilized nations excepting the United States and Great Britain. It is interesting to trace the origin of our present burdensome system of weights and measures.

The establishment of our present system dates back to the time of Henry VII of England. During his regime, the weights and measures of the realm were in a state of great confusion. Archaic shire or local standards prevailed, and an effort at reform was made. A commission was named to submit to the crown a national common standard. One of the first difficulties encountered was to find an acceptable unit of measurement. This Gordian knot was cut by the King, who told the commissioners to take his foot for their unit. His majesty planted his pedal on a piece of paper and the length of it was marked, and became the foot of twelve inches, in use among us today. Henry was in no danger of being mistaken for Cinderella.

In most respects the present obsolete system was introduced into England by the Hanseatic League, which controlled English trade until Queen Elizabeth drove out the German influence. As the World Trade Club reminds us, the Germans threw over their old method in 1871, and adopted the metric system worked out by James Watt, the British inventor, in 1783, and soon accepted by France. Later it became the standard in nearly all civilized States, with the two important exceptions of Great Britain and the United States.

It is a simple system with only four principal units—dollar, meter, liter and gram. Our coinage is metric, our weights and measures old German-English. To many people habit and indisposition to mental exertion have been obstacles to reform; but, however much the change may be obnoxious to provincial minds, if we are to enter largely and successfully into the trade of the world we must conform to the world's standards. Failure to do so only can result in failure to reap the commercial harvest, at our command if we will adopt the means and measures to accomplish the object.

STYLEPLUS CLOTHES



Any man can find his style in Styleplus

Tall or short, stout or thin, young or just a bit less young, you can walk into the Styleplus Store certain of getting *your style*. The fabric you like. The model you like. The fit you like. *And*, the price you like!

All-wool fabrics. Style-correct down to the last refinement. Thorough workmanship. Dependable wear.

Our known price policy insures exceptional value. The sleeve ticket put on by us tells the price.

Buy your clothes in a *store*. You can select exactly what you want. You can try on the suit. You are satisfied *before* you pay your money.

Pick out your Styleplus Clothes for fall *now!* Buy with this in mind: Conditions are forcing clothing prices steadily upward.

Sold by one leading clothing-merchant in most cities and towns. Write us (Dept. AK) for name of local dealer.

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And a limited assortment at $25

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America's known-priced clothes

IF you have a farm for sale or trade, livestock, machinery, implements, vehicles, poultry, musical instruments, nursery stock, building material, new or second-hand goods of any kind, dogs, rabbits, motorcycles, bicycles, automobiles, sewing machines—in fact, anything you wish to sell—advertise it in the Orchard and Farm. A little ad should get you a buyer. Advise us the details and we will prepare an ad and advise you per cost of insertion. No charge for this service.

ORCHARD AND FARM Examiner Building, Los Angeles.

Removal Notice

Jennings Talbot Chemical Co.

Formerly Purolene Disinfecting Co., Los Angeles, Cal., will open at 213-215 East 7th St., Los Angeles, Cal., with a full line Sprayers, Orchard Sprays, Government Ant Killer, Jennings' Pine Oil Disinfectant (used by 90% of the veterinary surgeons on the Coast); Koltarcre Sheep Dip, very high test, kills a bug, guaranteed to kill all insects, fine for flies around the house; Pulex Ant Killer, a non-poisonous powder; Fly Oils, Sunbeam Auto Polish, Liquid Soap, Green Soap, etc.

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Write for Prices.

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60 Day's Trial

This 4-compartment round feeder is storm and rat proof. Automatic gates supply feed only as needed, keeping all fresh and sweet. 25 to 50 bushel capacity. Lasts a lifetime without any fixing. *Costs less than to make it yourself.*

FREE Write for catalog and price with trial offer. Let us prove that you can save one bushel out of every four you are now feeding. Address, today.

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Weight 5440 pounds.

Of Any Tractor in Its Class

LOWEST COST OF OPERATION AND MAINTENANCE

A Perfect Coal Oil Motor
—Burns Kerosene—
ALL OF IT.

IF WE SHIP YOU
IMMEDIATELY FROM OUR WAREHOUSE STOCK IN SAN FRANCISCO

Ample Power for Threshing or for Filling Silos.

Pulls Four 14-inch Plows.

THIS TRACTOR

FOR YOU TO KEEP AND USE AS YOUR OWN,
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then agree to show the tractor to ten or more of your friends and tell them of the easy terms and exceptional offer we make, all of which we will explain if you will say on a postal "Send particulars of tractor offer," and address your postal card or letter to AUTOMOTIVE PRODUCTS COMPANY, 112 Market Street, San Francisco, Calif.?

AGENTS WANTED It is to our interest to secure an Active Representative to Look after our Business in unoccupied territory—the more territory we have filled the more Business our Company will do—so therefore you can see this is a Co-operative Business—your Success means Success to our Company. Territory is being filled up very fast on account of our extensive advertising.

Forage Crops on Range or Ranch

(Continued from Page 15)

Texas: I cannot recommend Rhodes Grass too highly. It is a weed killer and also chokes out Bermuda and Johnson grass, as I have observed in my field. It is a good drouth resister and also it is hard to "drown out." It stands tramping well, too, in the pastures as the cattle tramp the runners in the ground, which forms heavier sod. It will stand quite a severe frost. It is easy to exterminate by plowing. I know of no other grass that equals it for pasture or hay. It does well on both heavy and sandy soil.

Smilo a Favorite

Another plant we have grown for some time is Smilo grass, already well known throughout the Southern part of the State, but destined, I believe, to enjoy even greater popularity. It is an ideal range plant, and good success has been attained in simply sowing it broadcast before the rains at the rate of about 1 pound per acre. It is a hardy perennial, evergreen, drouth resistant, and stools and seeds freely. Once established it is a valuable asset, as it thrives under unfavorable conditions.

The above grasses are all adapted only to mild climates. This is true of many of the new forage plants, especially those introduced from Australia or Africa. There is one grass which we have grown experimentally, however, that is used in the East and North and is one of the hardiest of perennials.

No amount of cold will kill it and it will stand the severest drouth. This is known as Bromus Inermis, Russian Brome grass, or simply Brome grass. However, there are several varieties of Bromes. Russian Brome is essentially a pasture grass but also makes good hay. It does not make the tremendous growth of some of the above-mentioned plants. It is not recommended for locations and sections where higher-yielding plants may be grown, nor is its feeding value as high as that of some of the others, but it has a distinct value in dry, cold regions.

A "Bank"

Of Fog Grass, a unique plant which has the property of holding the moisture of the night-fog, after other foliage has been dried by the sun.

Giant Wild Rye

Another grass which is meeting with increasing favor in less favored districts is Giant Wild Rye grass, formerly regarded as a weed and seldom cultivated. Experiments have shown, however, that it is particularly well adapted to alkali soils, grows luxuriantly in meadows, along a sandy "wash," on hillsides with brush, on a clay "mesa" or even amid the sage and greasewood. It will endure zero temperature and make seed with very little rainfall.

Natal Grass

Natal grass is another interesting plant, which has been grown for some time in Florida, and only recently introduced in California. It is propagated in the same manner as Elephant grass, by planting joints or divided roots. It is valued highly for meadow pasture, or may be cut and dried for hay. Natal grass requires about 85 days to reach maturity from seed. May be cut several times, and is about as hardy as millet. Five pounds of seed required for broadcasting one acre.

Fog Grass

One of the most unique plants that has come to my attention, and one which has been successfully grown in my experimental plot, is known as "Yorkshire Fog Grass." It seems to have the property of condensing and holding the moisture of night and early morning fogs. The drops of moisture may be seen upon the plants long after all other plants are dried by the sun. The blades grow to a length of four feet, standing 24 inches high and drooping to each side of the row, making a spread of about five feet. The plant is like velvet to the touch. It may be grown on moist meadowland or on soil too poor to support other grasses. It seeds freely and increases rapidly. It is rather expensive to establish, as about 20 pounds of seed to the acre are required.

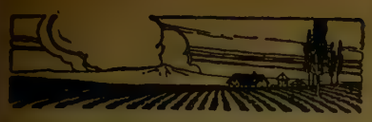
Teff Grass

Teff grass is a very fine, silvery plant, which makes excellent hay. Planted early in April, it will produce several cuttings in a season. It is somewhat similar to smilo, but is an annual, although it will survive the mildest winters if not cut too late in the fall. It has not been tried out on the range, but produced excellent results under cultivation. Our demonstration plot grew so rapidly that although the seed was not sown until May first, the plants were transplanted May 28th and were ready to cut for hay July 15th. Three weeks after cutting it was ready to cut again. It has a shallow root-system and therefore will probably not become popular as a pasture grass.

One of the finest grasses ever brought out for marshy or mesa lands is Paspalum Dilatatum. It grows in any kind of soil, but is especially valuable for lowlands. Grows the year round and makes excellent hay, although it is more highly regarded as a pasture plant. It forms dense tufts, making a sod which will support cattle on marshy lands, and is highly relished. It is easy to eradicate, but will itself choke out weeds, including devil grass. It possesses really remarkable properties in that it will become dormant and withstand a very severe drouth, while on the other hand, it will survive if completely submerged for several weeks.

A SECOND ARTICLE

On new and useful forage plants will be published in our November issue. It will pay the rancher or stockman to set aside a small plot of ground on his own land and to experiment with some of these new plants. A little green feed, at a time when rains fail, may save a thousand times the cost of establishing permanent pasture.



Unique Fruit Ladder

A FRUIT LADDER which is light enough for one person to handle with comparative ease has been constructed on the F. L. Robinson farm at Corvallis, Ore., and has proved to be a great convenience and time-saver in harvesting the crop.

The ladder is made of a green pole taken fresh from the woods. The "inventor" selected a young sapling of sufficient height to give the desired length of ladder. After the pole was cut, trimmed and peeled, it was sawed lengthwise down the center from the butt to within two or two and one-half feet of the top. Baling wire then was closely wrapped for a length of about six inches and securely fastened around the unsawed end of the pole to prevent the two halves from splitting apart to the end, when they were spread to form the legs of the ladder.

A long wedge-shaped piece was

Inventors

Are not all in the shops and factories. Almost every farmer and fruit-grower displays inventive genius every day in his regular work. And frequently the "home-made" article is more ingenious and satisfactory than the manufactured one. Send the Editor a description of YOUR invention.

snugly fitted into the split crotch and solidly nailed on each side to strengthen the top of the structure. Steps were then nailed across the legs and the device was complete. The steps were set down slightly into the legs. This made a more substantial step, in addition to furnishing a better nailing surface.

In order to secure comfortable foot room on steps near the top the two halves of the sapling were spread five or six feet at the bottom and the steps were put on from the top down. As the lower ones were nailed in place the halves of the sapling were drawn back to the desired width.

In operation, the pole end of the ladder is placed in a crotch of the tree. It is surprising how small a crotch will support the weight of ladder and picker. With this device, practically all the fruit on a tree can be picked readily and easily with the minimum expenditure of time and energy.—E. D. Roseman.

A One Man Cultivator With Four Man Capacity

"It Leads the Way"

MERRY GARDEN AUTO CULTIVATOR

THIS handy motor driven cultivator will do the work of four hand cultivators better and easier. It does away with the old method of irksome pushing, pulling, twisting and bearing down. Goes between wide rows and astride narrow ones, working within half-inch of the plants. Driven by its own power, "it leads the way."

Greater Yield

Crops cultivated with the MERRY GARDEN show the greatest yield because best cultivated. It destroys the weeds, works close up to the plants—as near as one-half inch—and breaks up the soil producing perfect protection of "surface mulch." The saving in labor and the increase value of crops will more than pay for the MERRY GARDEN in thirty days.

Better Cultivation

The MERRY GARDEN goes down deep — four to five inches — thoroughly loosening the soil and not merely scratching the surface. It works uniformly without slighting a single row. All soils, no matter how hard baked, yield readily to the action of the MERRY GARDEN.

So Simple a Child Can Run It

The MERRY GARDEN is as simple as it is efficient. Controlled from the handles which are adjustable to man or child. Driven by a 2 h.p. motor and travels from 120 to 200 feet per minute. One gallon of gasoline will operate the motor from 4 to 8 hours. Engine is water cooled; wheelbase 17 inches; wheels 20 inches with 3 inch face. Pulley furnished for portable power purposes. Perfectly balanced and easily handled by man or boy.

Furnishes Portable Power

The MERRY GARDEN serves the double purpose of a cultivator and portable power plant. Simply attach the pulley frame furnished and you have an efficient power plant which will furnish power for the saw, separator, washing machine, churn and other motor driven machines. Pulley frame complete is $10 extra.

Money Back Guarantee

Our rigid satisfaction-or-money-back guarantee protects you fully. This is our guarantee: If the MERRY GARDEN fails to do the work, purchaser in accepting same, agrees to notify us within five days from receipt thereof. We reserve the right to send a demonstrator and if the machine fails, money will be refunded.

Price: $185.00 f. o. b. Cleveland, Ohio. Terms 10% or $18.50 with order. Balance on delivery with privilege of examination subject to five-day trial and guarantee. Shipping weight 250 lbs.

The Atlantic Machine & Mfg. Co.
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Gentlemen: Enclosed find $18.50 for which ship the MERRY GARDEN AUTO CULTIVATOR, balance to be paid on delivery. This order is placed subject to the terms of your money back guarantee.

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from this advertisement. Just fill out the order blank and mail it direct. If after a thorough 5-day trial you are not satisfied, you will get your money refunded in accordance with the terms of our guarantee. Do not waste valuable time using hand cultivators when the MERRY GARDEN will prove such a profit maker on a "pays for itself" basis.

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Your Boy

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FARM Pump Engine

without any trouble and without any danger to himself. It is so simple that it is easily understood and so well protected that there is no chance to get hurt. It will make him more interested and contented in his work on the farm, and at the same time give him some valuable education. It will also relieve you of all worry about water for your stock.

The Fuller & Johnson Farm Pump Engine will pump from 200 to 250 gallons of water per hour. Needs no belts, braces or special platform. No extras to buy—comes ready to set up to your pump and start going. It will also operate other machinery. Write for *Catalog No. 17 and read all about this remarkable engine and the remarkably low price at which it is sold.*

Write for name of nearest dealer.

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GRIND YOUR FEED
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PUMP YOUR WATER
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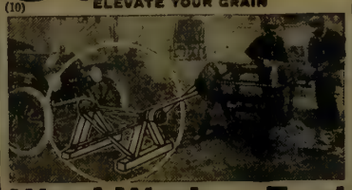

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Can be used with Ford, Overland, Dodge, Reo and Chevrolet 490 cars and Fordson Tractor. Your automobile has a powerful engine—it will outlast the car and you might as well save your money and use it to do all your farm work. **No wear on tires or transmission.** Hooks up in 3 minutes. No permanent attachment to car. Cannot injure car or engine.

Friction Clutch Pulley on end of shaft. Ward Governor, run by fan belt, gives perfect control. **Money back if not satisfied.** Ask for circular and special price.

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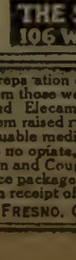
All you want the year round wherever you want it—for house, barn, field, any place. Bore your own well, as thousands have done, with our time-tested

Standard Well-Boring Outfit

Easily operated by hand. Bores wells 8 to 16 in. dia., up to 100 ft. deep. One man bought outfit 8 years ago and has bored over 25,000 feet of wells.

BORES 100 FT. WELLS BY HAND



Make $20 to $30 per day boring wells for neighbors—easy to get 50 cts. to $2 per ft. E. C. Cole, Porter, Okla., writes:—Have just bored 41 foot well for neighbor in one day and made $41.00.

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A syrup preparation our mothers and grandmothers used to make from those well known roots and herb, Horehound, Licorice and Elecampane, that everybody praised and many of them raised right on the old farm home; to this we add the valuable medicinal property of the "Eucalyptus." It contains no opiate, is pleasant to take and immediately relieves pain and Cough of Bronchitis, Influenza or Croup. A four ounce package, delivery insured, to any address in the U. S. on receipt of a Post Office order for Sixty Cents.

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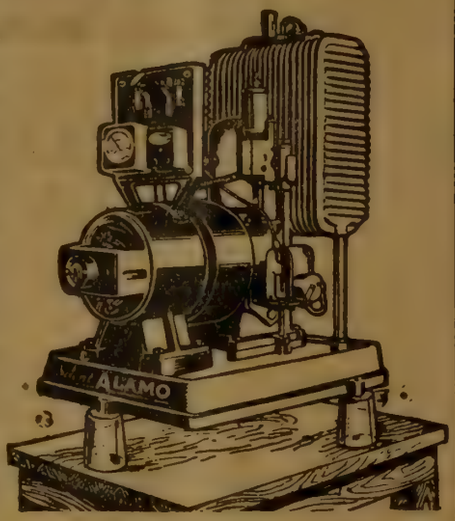
Electric Light and Power Plant

The Silent Alamo supplies brilliant illumination in the house. You merely press a button. Floods the barn and other buildings, too. Add many hours to working time. PROVIDES RUNNING WATER for house and barn. Supplies power to run small power machinery—operates the churn, separator, washing machine, electric fan, etc.

THE QUIETEST RUNNING and most powerful motor used on any similar plant. No ruinous vibration. Requires the minimum of attention. Motor automatically stops when oil gets low, water runs low, and when batteries are fully charged. Trouble-proof.

WRITE FOR ALAMO BOOKLET, which tells you how to select an electric light and power plant.



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It Plows, Harrows, Cultivates, Runs any 4 H.P. Stationary Machinery.

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For Every Make of Tractor

from a Fordson to a Caterpillar—every make of tractor engine works better and lasts longer if lubricated with PENNZOIL — the Pennsylvania paraffin-base oil.

PENNZOIL keeps the motor running smoothly through the hottest day and hardest haul — where cheaper grades of oil "break."

Next time—buy PENNZOIL. If your dealer won't supply you, order direct from us.

PANAMA LUBRICANTS CO.
2624 Santa Fe Ave., Los Angeles, Cal.

PENNZOIL

Your Nursery Stock—Weldon

(Continued From Page 6)

the dreaded blight, and in the future the nurserymen will be obliged to choose root-stocks for propagation purposes with a full knowledge of their ability to reduce or prevent pear blight infection.

Variation in seedling trees grown for the root system which is used in propagating known varieties, is much greater than in the case of budded stock. With a full knowledge of this fact there should be more attention paid to the growing of uniform seedlings through the selection of good, uniform seeds. Seedling apples have been grown from the seed of the pomace from cider mills, where possibly a dozen different varieties have been pressed. Peaches are often grown from pits gathered at the canneries and there may be several varieties that enter into the growth of a block of seedlings. Too little is known as yet about the most desirable seeds to use, and the future will see much experimental work along this line.

Transmission of certain diseases through the seeds is a possibility, and time alone will give us a better knowledge of some of these things which at present are known to be of importance but with which our present knowledge is insufficient to cope.

Use of Wild Varieties

There has been an effort to grow the best seedlings through the use of certain wild fruit seeds. As the best example of this it is only necessary to mention the well-known **myrobalan** plum seedling which is, without doubt, the best stock for all kinds of plums, that has yet been grown. We know little at present about the ability of seeds of known varieties of plums to produce desirable stocks, but there is reason to believe that some of them will give even better results than myrobalan.

The Average Orchard

The results of planting non-uniform and often poor stock are seen in practically every orchard. Some orchards that are rated as very fine, if carefully studied, furnish examples of stock that is not of the best. Perhaps it is well to illustrate what is meant by this statement by giving some observations and well-known facts in connection with the peach, which is one of our most cosmopolitan fruits.

The average production of peach orchards in California, taking into consideration all bearing trees, is about five tons per acre, a yield which is not uncommon from a five-year-old orchard of heavy bearing trees. Roughly speaking, there are planted on an average about 100 peach trees to the acre. A five-ton-per-acre yield would, therefore, mean an average of about 100 pounds of fruit to the tree. To bring the average up to this figure it is necessary for some trees to bear 400 pounds or more, as there are others which will bear only 25 pounds or less. Recently, when I was in an orchard of Phillips Cling peaches, the owner called my attention to a tree which produced last season 19 picking-boxes f fruit and another which produced 21 picking-boxes. These trees, according to his testimony, bore annually an amount far in excess of the average.

They were larger trees it is true, but in addition to size they possessed individual bearing characteristics that made them far more valuable than other individuals in the same orchard. The tree which had 19 boxes produced about 760 pounds of fruit, while the one which had 21 boxes produced approximately 840 pounds. Nearly every orchardist has here and there in his orchard one or more trees of this character. These are the individuals that should become known, and that should be used for bud selection purposes. In propagating from such trees, there are being developed individuals which have the same tendencies, and much heavier production could be expected of 100 trees grown from buds taken from a heavy-bearing individual than from 100 trees grown from buds selected without any thought of the productivity of the parent trees.

Planters and nurserymen are realizing, more and more, the importance

THIS REMARKABLE ARTICLE Is but one of a series which Mr. Weldon will contribute to Orchard and Farm. In NO OTHER AGRICULTURAL JOURNAL will you be able to secure the benefit of Mr. Weldon's long experience and scientific knowledge. His book, "Pear Growing in California," as published by the State Horticultural Commission, is considered the last word on this subject and is quoted as an authority all over the world. He will write articles designed to be of practical help to every fruit-grower. He will also edit our entire Horticultural Department. CAN YOU AFFORD TO LET YOUR SUBSCRIPTION EXPIRE?

A "High Tester" in an Apricot Orchard

The tree in the foreground has an unusual individual record. It has consistently outyielded other trees in the same orchard. The time is coming when tree "boarders" as well as low-yielding dairy cows, will be "culled out."

of this matter. It is so important that the California Nurserymen's Association is now contemplating the employment of a horticultural expert whose duty it would be to discover heavy bearing individual trees that produce fruit of good quality and true to type, so that the bud-wood may be taken from worthy parents, and the stock possess greater uniformity and heavier bearing tendencies than heretofore.

In the case of citrus fruits, A. D. Shamel of the United States Department of Agriculture office at Riverside, has done a pioneer and very notable work. The deciduous field is virgin and more startling revelations than have yet been dreamed of await the investigator of deciduous fruits who will apply himself closely in this kind of work.

The orchardist should learn which trees pay and which do not. This will mean that individual tree records must be kept, and at first thought this may seem expensive and not worth while. But why, in the case of a tree that is nonproductive, should it be allowed to stand in the orchard year after year when it does not pay interest on the ground it occupies, any more than a cow in the dairy herd should be fed year after year when she doesn't pay for her keep?

Diversified Farming

A FEW years ago the writer was engaged in farmers' institute work in Colorado. Fruit growers were discouraged because of losses from frost, high freight rates, unfavorable soil conditions and poor prices.

I remember well an institute session in an orchard community where most of the people were trying to make a living out of apples alone; still others were playing a much more unsafe game in that community and were trying to raise enough peaches to pay their living expenses. Many of these growers had canned milk in their cellars and bought butter and eggs from the grocery store.

Hogs were troublesome to keep on high-priced land; therefore, the bacon to go with the eggs was bought from the butcher. During a very discouraging period when the people were laying bare their troubles, hoping that the agricultural experts in their midst could help them, one prosperous farmer arose from among them and this was his testimony:

"I am doing well on my farm and the secret of my success lies in the fact that every day of the year I have something to sell."

He then went on enumerating the things he had—grain, hogs, chickens, ducks, eggs, vegetables, hay, alfalfa seed and fruit. Is there not a lesson in the testimony of this man for some readers of Orchard and Farm?

The fruit grower who puts all his eggs in one basket may succeed under most favorable conditions, but the chances are against him. One year's entire loss of a crop for the one-crop man may mean financial ruin, but the man who has three crops or more to depend upon can usually pay expenses with one or another.

Diversity of crops should be preached continuously by agricultural workers.

Expensive Business!

AS AN illustration of the capital that is necessary to develop a citrus grove a tract of young lemon trees was recently examined where the outlay of money up to the beginning of the second year's growth of the trees (thus including one year's care) was $884 per acre, or $8840 for the ten acres which were in the tract.

No doubt there is many another tract where just as much, and some where more has been spent in development work. Those who have the money and who are willing to put this much into the clearing and preparation of the land, and later the planting of the orchard, must have faith in the citrus industry.

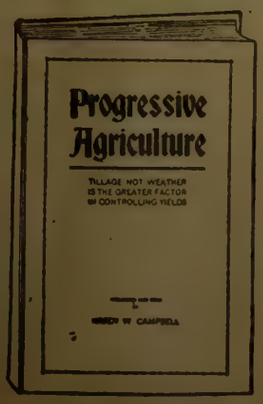
The man of limited means is liable to fail should be attempt to grow fruit in such high-priced land; but the man with capital who will spend all the money necessary to make the trees grow and produce the best fruit can succeed. He is doing it!

One of a Million—You! Volunteer for Red Cross

Enlist now for the Third Roll Call. Twenty Million members are to be enrolled November second to eleventh, inclusive. Your heart, your hand, your dollar is needed in order to keep the pledge abroad and to fulfill demands at home. Give one week's service to Humanity—It pays your conscience the biggest dividend on Americanism.

CAMPBELL'S PROGRESSIVE AGRICULTURE

BIG CROPS DRY FARMING



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Tillage, Not Weather, Controls Crop Yield
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This book contains nineteen chapters, each dealing with specific factors of vital importance in all crop-growing questions. The New Tillage Idea clinches the certainty of successful farming, not only in dry seasons, but any and all years. The chapter on Fertility alone is worth many times the book's cost. The explanation of the effect of certain kinds of tillage one year on the next year's crop is one of the big features and, last but by no means least, it proves beyond discussion that timely tillage will control yields in spite of droughty seasons.

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Enclosed find 75c. for which send, postpaid, "Campbell's Progressive Agriculture," including one year's subscription to Orchard and Farm. It is understood my money is to be returned if not fully satisfied.
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PUT a pipe in your mouth that's filled brimful of Prince Albert, if you're after smoke peace! For, no matter how bad has been your pipe-past or your experience rolling your own, P. A. will hand you such tobacco joy you'll wish your job was to see how much P. A. you could get away with!

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Prince Albert never tires your taste *because it has the quality!* P. A. is made by our exclusive patented process which cuts out bite and parch—assurance that you can make new smoke records without any comeback but real smoke joy every time you fire up!

Prince Albert is supplied in toppy red bags, tidy red tins, handsome pound and half pound tin humidors—and—in that classy, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

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IRRIGATION SYSTEM

Neither alfalfa nor orchard cultivation can be conducted advantageously without an efficient irrigation system. Now is the time to install your system, as all indications point to much higher prices in the very near future. Don't delay, but write today for literature and any information you may require on the subject of Irrigation. The advice of our experts is yours for the asking.

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"Originators of the Valve System of Irrigation."

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PLANT THE RIGHT SEED AT THE RIGHT TIME

Plant the right variety for your purpose, whether you are growing for home or market or whether you are growing for cattle, horses, hogs, goats, rabbits or poultry.

See the 1919 Catalog of the

Aggeler & Musser Seed Co.

620 SOUTH SPRING STREET, LOS ANGELES.

Don't Relax Pear Blight Fight

By George P. Weldon

THERE is no season of the year when pear blight is more surely and easily detected than in the fall before the foliage drops. Because of the fact that the disease is less active in the fall than in the spring and early summer months, the pear grower may neglect the work of cutting it from the trees at this time, depending upon his pruners to discover all cases when they prune in the winter or next spring.

This would be all right were it not for the fact that after the leaves fall it is much more difficult to search out the diseased portions. Thus, blighted twigs may be missed and left to endanger the orchard when active growth begins again.

Blight is too serious a disease of both pears and apples to justify neglect of any phase of the control work. Failure to remove blighted branches at a time when they can easily be seen, may result in serious difficulties later on.

Such branches now have dead, brown leaves hanging to them; when these are gone, virulent cases may be overlooked. The time to fight pear blight is whenever a case is found in the orchard.

Standardization Law

THE last Legislature, by passing the Amended Standardization Law, applying to the packing of fresh fruits, and Governor William D. Stephens, in affixing his signature to the bill, performed a service to the citrus industry that will, without doubt, be greatly appreciated in years to come.

By making it a misdemeanor to sell or offer for sale fruit that has not attained at least 25 per cent color before being picked, the new law will check a practice which has injured the reputation of California oranges very materially in the past.

There has been too much green citrus as well as deciduous fruits sold in the effort to take advantage of early season prices which are often very high. Unfortunately the bad taste of some of the first fruit of the season picked and shipped too green, has interfered with later sales.

Oranges that have eight parts of soluble solids to one part of acid may be picked when 25 per cent colored, but oranges which do not test "8 to 1" must be at least 75 per cent colored before picking.

Deadly Cyanide

POTASSIUM CYANIDE, sodium cyanide, hydrocyanic acid gas; in fact, cyanide in any form, is deadly and too much care cannot be exercised in its use.

It seems nothing short of providential that tons and tons of the crystals have been used in the Southern California citrus districts, as well as the Tulare County district of the North, with so few fatalities from cyanide poisoning.

Cans of this material, with the lids off, have been seen lying in a grove where children could easily have access to them, and how like candy it looks! It makes one shudder to think of what might be the consequences of this carelessness.

Occassionally an accident is recorded and just recently a report came from Orange County of a death from being overcome by hydrocyanic gas used in fumigation.

Men in any dangerous occupation, where everything goes well year after year, are apt to grow careless. With a knowledge of the deadly nature of cyanide, however, carelessless is inexcusable.

Dried Fruits

WITH the passage of the new standardization law by the last Legislature an entering wedge has been driven into deceptive practices that will ultimately separate them from the industry. It is now a misdemeanor to prepare, sell or offer for sale a deceptive pack of dried fruits as well as fresh fruits and vegetables.

Deceptive pack is defined as one where the outer or exposed surface is so far superior to the inner or unexposed portion as materially to misrepresent the entire contents.

Without doubt the good work along standardization lines which has been conducted under the direction of the State Commissioner of Horticulture, since 1915, will continue under the new State Department of Agriculture, and under the new law, all those who have misrepresented their fruits by the manner of pack will be dealt with severely. An honest pack, whether of dried fruits or something else, will mean success to the producer, less anxiety for the dealer and satisfaction on the part of the consumer.

The Labor Problem

REALIZING that the peach growers and canners near Ontario were confronted with a serious labor shortage, and recognizing the need for quick action, a committee of prominent as well as public-spirited citizens of that town conducted this summer a campaign for the purpose of enlisting the aid of all available local help.

Merton E. Hill was chairman of the committee, and under his energetic leadership the group of well known men put forth their best efforts for the good of the community.

A house-to-house canvas was made in the city and community and the names of all women who were willing to work in the canneries were secured. Large window cards were displayed in the windows of every business house in the district.

The Chamber of Commerce co-operated closely during the campaign, and served as headquarters for the registration of those who would work.

Because of this method of solicitation, no difficulty was experienced in securing the 1200 women needed to save the peaches. In fact, results were so marked where a shortage of labor seemed imminent, that there was a waiting list available to draw upon at any time when needed during the peak of the harvest season.

Suspended over the main highway between Los Angeles and the east, in Ontario, was a large canvas sign bearing the words: "Save the peaches."

It pays to advertise" is a slogan which the peach growers of the Ontario district will believe in for all time.

Lemonade

THE California Fruit Growers' Exchange is conducting a campaign throughout the East for the purpose of interesting the dispensers of soft drinks in preparing real lemonade from real California lemons.

This is certainly a commendable line of work. As market values must necessarily depend upon consumption of our agricultural products, anything that will increase consumption not only will tend to prevent disastrously law prices, but also will stabilize the business in a perfectly natural way.

From the standpoint of a consumer of lemonade, which since my early childhood has been a favorite drink, it would seem to me exceedingly helpful if something could be done to prevent profiteering and adulteration and to enable the consumer to purchase it at a reasonable figure.

It has never seemed unreasonable to pay five cents for the fizz and flavor of soda water; the one cent war tax, which we now pay on soft drinks is cheerfully given to Uncle Sam. But when the dispenser of soft drinks charges fifteen cents plus the war tax for a glass of lemonade, when lemons are selling at thirty cents a dozen, I feel like crying, "Excess profit."

Fruit growers interested in the marketing question (and who is not included in this class?) are beginning to realize the importance of such little things as this in the expansion of the demand for their products. And only through adequate organization can such important field work be accomplished!

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

When There's Hard Work To Be Done

Folks are getting the kind of service they want and have a right to expect from United States Tires.

That's the one big reason for United States Tire popularity.

Where there's hard work to be done —work that requires tire strength and tire dependability,

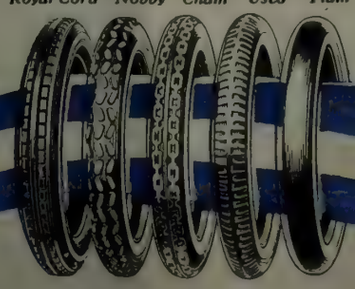
—there you'll find United States Tires.

United States Tires are good tires by right of *might.* They are built to give wear and service—to resist hard use—to save money in *extra* work and *extra* miles.

There are five famous types of United States Tires—one for every need of price or use.

United States Tires are Good Tires

'Royal Cord' 'Nobby' 'Chain' 'Usco' 'Plain'



Manganese steel costs perhaps half as much again as ordinary steel. But it wears twice as long. Tractor manufacturers who build machines to last only a season or two would hardly use manganese steel. It only appears in tractors that are built for year after year of strenuous work. Its use is "the hall-mark of a good tractor." It is generously used in the Yuba.

"Hyatt Quiet!" An unforgetable phrase—because it rhymes. And the rhythm of smooth performance makes the Hyatt Roller Bearing indispensable in many parts of all models of the Yuba tractor.

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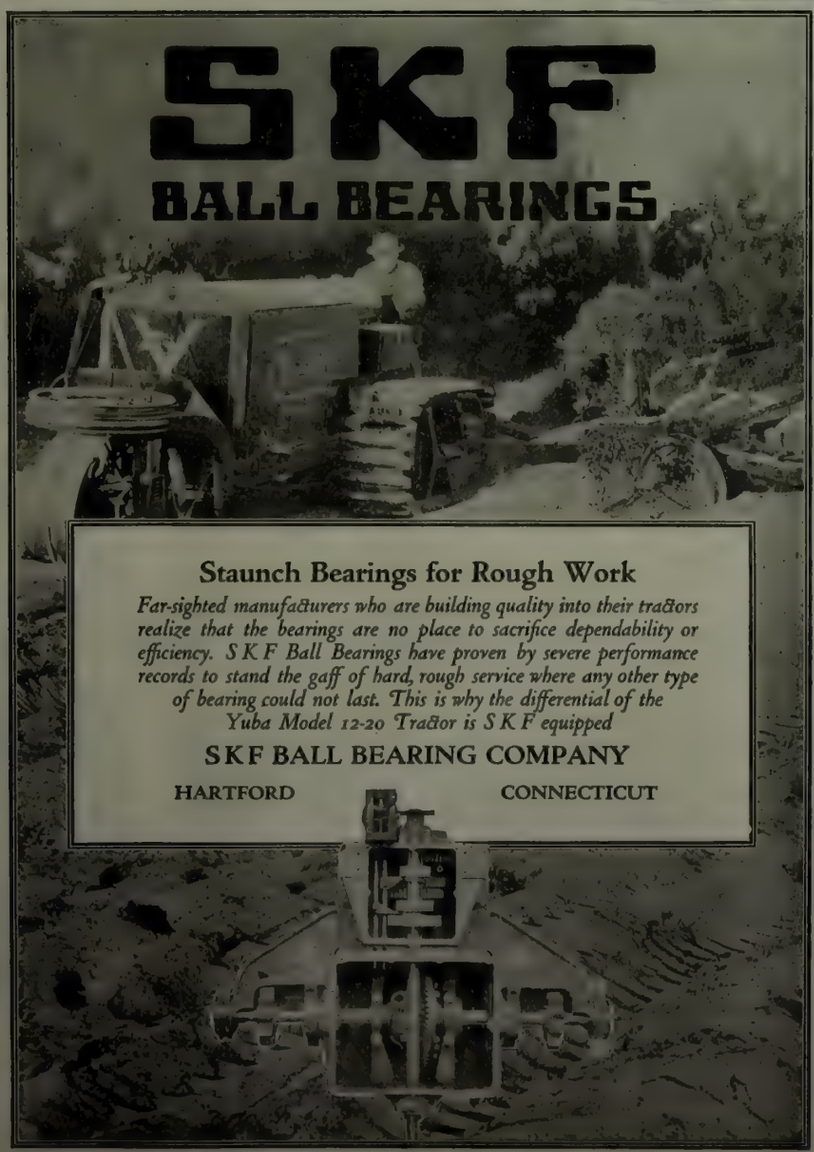
Returned doughboys can tell you of the splendid dependability of Wisconsin Motors. That's something that even the Boche learned. And when prospective buyers ask about the motor in the Yuba model 20-35, they are quite satisfied with the one-word answer: "Wisconsin."



There are many makes of ball bearings — but only those that are perfect in design and built of the staunchest materials can withstand the tremendous punishment of tractor duty. The SKF Company makes such bearings. They are used in the model 12-20 Yuba.

demonstration" and advertised as such, with the truck dealers meeting their share of the expense. It is not known whether this idea would work out in practice, but it is receiving consideration. Certain it is, however, that there is the greatest interest among farmers in motor trucks.

The Los Angeles demonstration is looked back upon with genuine appreciation and few regrets and it is to be hoped that the dealers will continue to put on these great educational shows. The benefit to themselves cannot be measured in actual sales; the benefit to the public is too great to be lost. And conversation with various members of the Association leads to the belief that another big demonstration will be held next year—a show which will again be "different" and which will afford many new viewpoints for the up-to-date agriculturist.

Demonstration Notes

More than 25 makes of tractors were represented. Over 100 machines were on the field.

The fuel consumption totaled over 2500 gallons, while more than 500 gallons of oil and grease were consumed.

One enterprising salesman stayed on the field until after six o'clock one evening explaining his machinery to an absorbed visitor, only to find that the latter was a professional tramp, intent on informing himself on every possible subject. Such visitors were the exception, however.

An interesting feature of the show was the exhibit of a tractor-mower, designed for attachment to any wheel-type tractor, the invention of A. D. Jones of Arizona. With an 8-foot cutter-bar this machine is capable of making a tremendous "dent" in a big hay-field in a very few hours. This device is made by the Pratt-Gilbert Company, large implement dealers of Phoenix, whose representatives were on the grounds throughout the show. It will be handled in Los Angeles by the Avery Company of the Pacific Coast.

A number of new tractors were represented; that is, "new" to Los Angeles. These included the "Stockton," a California product, the "Twin City," the "Allwork," the "Allen," the "La Crosse" and the "Toro," a convertible tractor-cultivator, handled by Douglas Boswell, who also showed the powerful Wallis. The Boswell tent was a center of interest throughout the meet, and the two unique tractors made a very satisfactory showing.

Of the above machines, the Stockton and Allen are made in this State, the latter in Los Angeles. It is known for its "water-ballast" feature, but made a record for itself during the show by its exhibition of power. The Community Manufacturing Company was much pleased with its showing at this debut.

The Stockton, which was shown also at the State Fair recently, aroused a great deal of interest, particularly among orchardists. Its future seems assured, and the factory is preparing to do a big business.

The Twin City hummed along in a circle hour after hour without attention, and also made a fine showing in the field. This machine, according to the Frank O. Renstrom Company, distributors, is fast making friends because of its power and dependability.

The Allwork, a product of the Electric Wheel Company, sold by Leigh M. Railsback, was shown in a new orchard size, especially designed for such conditions as obtain in California. The larger, standard "Allwork" also was exhibited. The enthusiasm of the distributor was borne out by the performance and specifications of this new arrival.

The La Crosse, differing in appearance and design from any Western tractor and most of the Eastern machines, attracted a great deal of attention, and successfully handled jobs of plowing undertaken with no less difficulty by machines of higher-rated horsepower. The Knapp Tractor & Machinery Company expect to make deliveries soon on the new "baby" orchard size.

Over the tents constantly circled airplanes belonging at the adjoining aviation field. Many tractor-fans took their first air-ride. Among those who viewed the scene from above was Mrs. H. L. Marsh, wife of the president of the Association.

Spraying Outfits

Were demonstrated by several dealers. This one was attached direct to a Fordson, for one-man operation. The show brought out a number of unique hitches and attachments developed by California dealers and owners.

Tractor Demonstration Lessons

(Continued from Page 10)

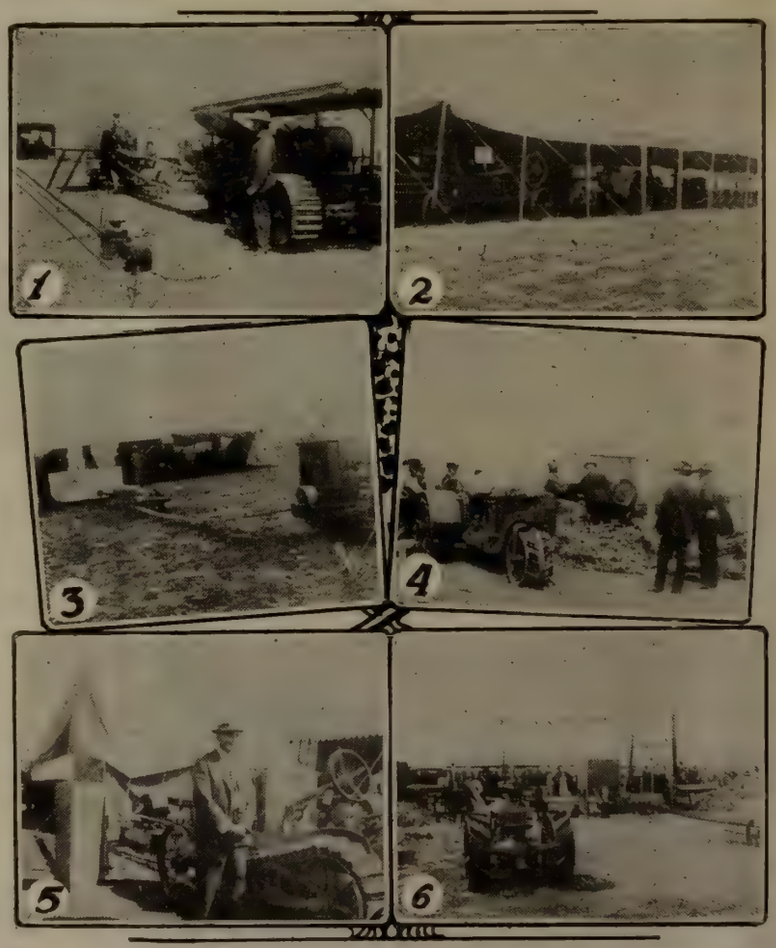
The Killefer Mfg. Co. had an excellent exhibit. The system of farming advocated by this company has meant a great deal to California, the chisels and subsoilers penetrating to a depth of from 7 to 26 inches, unlocking soil wealth which could not be released by any other means. Some of the largest subsoilers, capable of being drawn only by the most powerful tractors, such as the Holt "75," the Best "60," and the giant Avery "40-80," are marvels of construction and strength.

The remarkable "execution" done in the hard ground by disc-plows, drawn in big gangs by the larger tractors was a revelation. Seventeen-inch discs, each cutting 10 inches of ground, and used in gangs of from 10 to 15, are a source of wonder and admiration to the man who usually associates a disc-plow with soft ground.

The Samson exhibit was heavily-attended, this old friend of California ranchers living up to its fine reputation, and going into the hands of many new owners as a direct result of the show.

During recent years there has been increasing use of the disc-plow even in smaller sizes. One of the sensations of the show was the McKay disc-plow, drawn by many of the smaller tractors in the two and three-disc sizes. This unique implement, made in Rome, Georgia, will be sold in Southern California by Arnott & Company. It was shown with subsoiling attachments which, instead of increasing the draft, actually decrease it, as shown by "tractometer" tests. These subsoilers are used in hard ground and, together with weighted wheels, serve to hold the plow in the ground. No doubt many farmers who have remained faithful to the mouldboard type will be converted to discs by such plows as the "McKay" and the improved models of the big implement manufacturers, all of which gave a good account of themselves.

One of the most interesting exhibits in the accessory tent was that of the "Alemite" lubricator, a device for filling the grease-cups on a car, truck or tractor, doing away with the "dirty work" so familiar to all of us.



Random Views Snapped at the Tractor Show

(1) This "Yuba" Operated a Hay-Press Throughout the Show.
(2) A View of the International Harvester Tent.
(3) The "Cletrac" Showed Its Belt Ability at the Pump.
(4) No Camouflage About This "Samson" Grinding Stunt!
(5) The "Bates" Generated the Juice for a Movie Show.
(6) Several "Fordsons" Operated Belt-Driven Machinery.

Down in the big "corner" where these heavy-duty tractors and implements were shown, was one of the most comprehensive exhibits of the show, that of the Avery Company, of which Walter Rainey is local manager. The Avery was shown in six sizes, with a motor-cultivator "to boot." The distributors were disappointed in the fact that the new 6-cylinder "8-16" failed to arrive in time for the demonstration.

Perhaps the most complete line of implements was that shown by the B. Hayman Company, handling nearly 20 lines of implements and machinery. Arnott & Company had one of the largest and best-decorated tents, with a very complete line of implements, including the wonderful McKay plow.

The International Harvester Company showed a complete line of implements, including the "newly annexed" P. & O. plows. The International tractors were strongly in evidence, some of them "speaking for themselves" through clever signs, calling attention to the strong points of their design.

"We have been successful and we'll repeat our demonstration next year," seemed to be the sentiment of the majority of the members on the closing day of the show.

The E. P. Bosbyshell Company tent was the center of much interest. It seemed as though "something was moving" in every corner, Heider tractors being engaged in running various types of machinery both inside and out. The Wilson-Wetterhoid grinder, sold by this concern, which made such a sensation last year, was again in evidence.

The "Cletrac," famous little tracklayer, known all over the world, and shown by Smith Brothers, showed its usual speed and power. The distributors were well pleased with the interest shown in their product, perhaps the best-advertised small tractor made. A goodly percentage of the crowd each day was to be seen around the "Cleveland Tractor Company" exhibit. The makers of the Cletrac, instead of disparaging speed in field work, capitalized this feature, maintaining that with properly designed implements much more work can be accomplished with proportionately less horsepower.

The "Little Bear," a unique Los Angeles product made by the L. A. Auto Tractor Company, was shown in an "orchard" of stakes. This concern has made a conspicuous success in making a tractor out of a Ford chassis; not, however (as they point out continually) a "tractor-attachment."

Also capitalizing Henry Ford's name and backing it up with a superior product, the William L. Hughson Company, distributors for the "Fordson," made a wonderful showing. This concern had 20 machines on the field, and demonstrated more different kinds of belt and field work than any other exhibitor. Heavy sales to individual buyers were reported.

The little Beeman, with its "small sister," the "Merry Garden," was demonstrated by the Motors Equipment & Tractor Company, represented by Messrs. Dodge and Hays. This machine was shown in the "special California type," turned out by the Minneapolis factory according to specifications furnished by the local distributors and already in use by many local little-landers, who report the greatest satisfaction. This machine is designed to do the work of one horse. It was formerly called a "walking tractor," but the new model includes a riding sulky.

The Union Tool Company of Torrance again showed its product, the "Suregrip," a powerful track-layer which has made a conspicuous success as a comparatively new entry into the tractor field.

The versatile Moline performed many stunts erroneously believed by many farmers to be "beyond" a tractor. It was shown with a Fresno scraper, mower, drill, cultivator and the standard field implements. Although essentially a two-wheel machine, this tractor possesses remarkable traction and easily turned over the hard soil of the demonstration field, pulling two bottoms.

Next to the entrance to the field was the tent of A. F. George Company, distributors for the "Yuba," which was shown for the first time in all models, including the new "60." The factory salesmanager, W. H. Gardner, was on hand for the show, and while expressing some disappointment in the attendance, could not help being pleased by the showing made in actual sales. Alex McCloskey, manager of the A. F. George Company, stated that several sales had been made through the direct endorsement of nearby farm-owners.

The Fairbanks-Morse Company spent a large sum of money to install their pump exhibit. This concern, as well as the Kimball Pump Company, and others, showed actual work, the water being circulated through a cleverly-designed arrangement of tanks and weirs.

Another very interesting accessory exhibit was that of the "Tractometer," an instrument for indicating the drawbar pull of a tractor, so that the operator may know whether his machine is being overloaded. It is small and compact and is attached between tractor and implement. This remarkable machine is made in Los Angeles.

The exhibit of oils and greases was particularly complete. The Standard Oil Company had perhaps one of the most expensive exhibits at the show.

The "old-line" Sandusky, veteran of many demonstrations and known and liked for years for its strength and dependability, lived up to its reputation for cheerful service, and made many new friends.

The "Trundaar," voted by many visitors, the "neatest" of the tracklayers, created real surprise by its showing and will henceforth be mentioned near the top of the list by those who review the developments of the show. William Gregory & Sons, who handle pumps and machinery also, report that the interest displayed in their machine was extremely gratifying.

The " Bean," designed especially for orchard and vineyard work, demonstrated its ability in this line in an improvised "orchard" made by placing young trees in tubs on the ground at the proper intervals.

The Best and the Holt handled their usual big gangs of plows, and the heavy-duty tillage implements, such as those made by the Killefer Manufacturing Company. C. M. Walker, Holt sales manager, was on hand from the factory.

The tractor banquet, held at the Alexandria Hotel the night before the opening of the show, was attended by more than 300 dealers and guests, including visitors from the northern association. The diners were entertained by a special troupe of singers and by their own vocal efforts.

This Tractor-Mower

Is the invention of an Arizona man. It was brought to Los Angeles especially for the show, and attached to an Avery. However, it is designed for use on any wheel-type machine.

Rhodes Grass

ONE of the first California ranchers to import and experiment with Rhodes grass is O. J. Renfrew, who resides on the site of the Salton Sea, near Niland. Mr. Renfrew, who has been conducting experiments for the past four years, has uncovered some very interesting facts about this remarkable forage-plant.

Rhodes grass comes from the famous Cecil Rhodes ranch near Capetown, Africa. From here it was originally taken to Australia and it was from Australia that Mr. Renfrew secured his first seed. The original importation was made four years ago.

Mr. Renfrew has made a remarkable success of his venture. He has at the present time 80 acres carrying an excellent stand, 40 acres on which the stand is not quite so good, and 200 acres which he recently planted, and which gives every indication of successful development.

A Worth While Crop

Securing a stand, he states, is a very difficult matter, but adds that after time and labor has been expended and a good stand secured, "you have something."

Remarkable Reclamation

The land on which his Rhodes grass has exhibited such a rank growth was under the Salton Sea four years ago. It is an exceptionally hard adobe with a heavy content of alkali. It bakes and crusts badly and has a tendency to crack. On parts of it he made several failures before he found the ideal crop, which he is now convinced, is Rhodes grass. The grass is a perennial unless killed by a temperature of 18 degrees or less. In Florida it has been killed at 21 degrees in non-irrigable sections, while it has withstood colder temperatures in irrigable sections.

Of prime importance, Mr. Renfrew states, is the establishment of a heavy stand. This is difficult of accomplishment and calls for extreme care. There are several ways of preparing the land but after experimenting with sub-soilers and plows he is in favor of the sub-soiler. This loosens the earth to a depth of 14 inches.

There are also several ways of planting the seed. He has planted it by hand, broadcast, with a hand seeder, with a cotton planter and with a special machine called a Texas Rhodes grass seeder. The cotton planter has proved the most satisfactory in the long run. The drills are set 42 inches apart and the rows are doubled, making a row every 21

(Continued on Next Page)

Which?

By Charles H. Meiers

It's the arc-light and the pavement,
Or the sunlight and the sod;
It's the harsh song of the siren,
Or the bird-song—gift of God;
It's the weird, vain quest of pleasure,
Or the joy of Nature's ways;
It's the grim, hysteric night-life,
Or the lure of peaceful days.

It's the city and its glamour,
Or the country and its charm;
It's the strife in marts of commerce,
Or contentment on the farm;
It's the battle for existence,
Or a chance for true success.
It's the city and its struggles,
Or the farm and happiness!

If you had been on the Arizona

HERE she comes, homeward bound, with "a bone in her teeth," and a record for looking into many strange ports in six short months.

If you had been one of her proud sailors you would have left New York City in *January*, been at Guantanamo, Cuba, in *February*, gone ashore at Port of Spain, Trinidad, in *March* and stopped at Brest, France, in *April* to bring the President home. In *May* the Arizona swung at her anchor in the harbor of Smyrna, Turkey. In *June* she rested under the shadow of Gibraltar and in *July* she was back in New York harbor.

Her crew boasts that no millionaire tourist ever globe-trotted like this. There was one period of four weeks in which the crew saw the coasts of North America, South America, Europe, Asia and Africa.

An enlistment in the navy

gives you a chance at the education of travel. Your mind is quickened by contact with new people, new places, new ways of doing things.

Pay begins the day you join. On board ship a man is always learning. There is work to be done and he is taught to do it well. Trade schools develop skill, industry and business ability. Work and play are planned by experts. Thirty days furlough each year with full pay. The food is fine. A full outfit of clothing is provided free. Promotion is unlimited for men of brains. You can enlist for two years and come out broader, stronger, abler. "The Navy made a man of me" is an expression often heard.

Apply at any recruiting station if you are over 17. There you will get full information. If you can't find the recruiting station, ask your Postmaster. He knows.

Shove off!
Join the U. S. Navy

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What are you Feeding?

Anticipating the new feed law which becomes effective November 1st, we are now tagging **Great Western Besgrade Poultry Mash** showing analysis and ingredients used in its manufacture.

Great Western Besgrade Poultry Mash is a quality mash. We know you will realize its value when you know just what is used in its manufacture. There is no need of feeding an unknown quality now. On receipt of the coupon we will send you a pamphlet showing analysis and ingredients, also copy of new feed law.

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Gentlemen:
Kindly send me pamphlet showing analysis and ingredients used in Besgrade Poultry Mash; also copy of new feed law.

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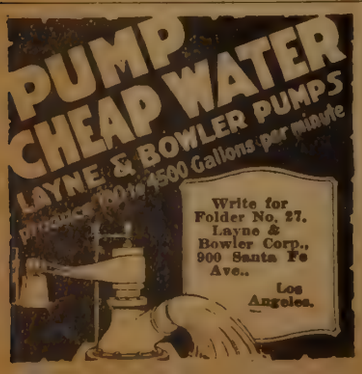
"Practical Farming and Gardening" should be in the hands of every practical farmer. Special departments by authorities in their particular line are of vital importance to Western farmers. Write Orchard and Farm for details.



Facts About Rhodes Grass

(Continued From Page 27)

inches. The grass takes root wherever a runner touches the ground but it has been found that it will not travel quickly more than 21 inches.

The seed is extremely light, weighing only seven pounds to the bushel. He has ascertained that 10 pounds per acre is the correct rate of seeding.

It is very important to plant shallow (not deeper than half an inch, and a quarter of an inch if possible).

Peculiarities of Growth

After it is planted the ground should be kept soaked for a month. One peculiar feature is that the plants will be seen coming up for six weeks or more. It is not safe to judge the nature of the stand for two months after planting, as the plants come so slowly and irregularly. After the grass is well up, irrigate as often as necessary. The corrugations, by means of which the field is irrigated, should be 28 inches apart.

Mr. Renfrew has secured interesting data as the result of his experiments. For instance, one summer for two weeks in the heat of the July weather, with the thermometer ranging daily above 100 degrees, he flooded a patch and tried to scald it out. After two weeks in the baking sun the plants were uninjured.

At other times he has tried to pasture various plots until they were killed out and in this also he has been unsuccessful. Again, he has let it go to hay and to seed to see what would happen. All that happened in this particular case was that the grass grew 8 to 10 feet high and produced a tremendous crop of seed.

One summer he cut it at all the freakish seasons of the year to see if he could dwarf or stunt it. It came through this test in fine shape. In short, Mr. Renfrew has found nothing that will kill it out to any extent and it apparently thrives on alkali soil.

It apparently will grow on any soil but is especially valuable for hard adobe and alkali because these seem to hold no terrors for it; in fact, can be reclaimed by it. Mr. Renfrew believes that he has actually solved the problem of using alkali and hard adobe soils in this State.

Rhodes grass grows well in the intense heat of some parts of the State and also grows well along the foothills and in cloudy sections. It is a perennial only where the temperature does not range below 18 degrees.

Renfrew has been unable to obtain seed shipments from Australia this year and has threshed his own seed, but has not nearly as much as he needs. He hopes to be able to import more within a short time.

As a stock feed, Rhodes grass ranks well with alfalfa and seemingly will not bloat cattle. He considers this feature one of its best points.—Wm. A. Trewin.

A Flock of Money-Makers

The range goat business has had many downs and ups. (The "downs" are placed first, advisedly.) However, many a fortunate owner of a flock of Angoras is today reaping a well-earned reward. Especially is marked success pastoral or agricultural pursuit. Orchard and Farm will publish more articles about Angoras.

Importance of Dehorning Cattle

(Continued From Page 9.)

with caustic leaves the head in better shape than when horns are removed with saw or clippers.

Use of Saw or Clippers

The most common method of dehorning cattle is to saw the horns off, and for this purpose an ordinary meat saw can be used, though there are specially designed saws on the market. Dehorning with a saw, when skillfully done, results in a good, clean job on any type of horn, while the wound is left in a condition to heal readily.

The use of dehorning clippers is also becoming common, especially when a large number of cattle are to be dehorned and when they are operated upon before the horn becomes hard and brittle. Clippers remove the horn more quickly and with less pain to the animal, but the saw has the advantage of not crushing the horn, especially in the case of older animals whose horns are hard and brittle. Neither does the saw cause as much bleeding, since by lacerating the blood vessels it causes a clot of blood to form quickly.

Whichever instrument is used, enough of the horn should be cut to prevent the growth of stubs. From one-eighth to one-half inch of skin must be taken off to insure this, as the horn-forming cells are probably then destroyed, thus preventing further growth of horns.

When a considerable number of cattle are to be dehorned it will pay to construct a dehorning chute, as the employment of the chute is a much more satisfactory method of holding animals during the operation than throwing with ropes or tying them to fences. A good type of chute is illustrated.

Cattle should never be dehorned during hot weather for at that time there is danger of the wound becoming infested with "screw worms."

The best time to dehorn is in fall and early winter or during the cool weather of the spring. There is little danger from screw worms in cool weather. As a safeguard, however, it is best to apply some fly repellant, such as pine tar or one of the coal-tar products, to the wound immediately after the animal is dehorned.

Goats For Sale

FROM

Catalina Island

It is our intention to dispose of all the goats now running on Catalina Island.

They have become quite well known in California as being an especially desirable goat for crossing with pure-bred milk goats, and their offspring is very desirable. Will have several thousand nannies for sale, ranging in age from six months up. Would prefer selling in quantities of 100 or more and will arrange with responsible parties for reasonable cash payment and notes on the stock for the balance. For further particulars address

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Los Angles, California

Alessandro No. 1101
"ENOUGH SAID." Service $10.00
SIR CHRISTOPHER, No. 2401, the buck that more than made good last season. Service, $5.00. Both purebred registered Toggenburg Bucks. Does called for at small extra charge. If possible bring does to ranch afternoons.
PASADENA GOAT RANCH,
2 miles north of Lamanda Park on Santa Nita Blvd.
ELMER E. McINTURFF, Mgr.

PAUL TAMARIX, NO. 957
The Great Toggenburg Buck is back in Los Angeles. He is famous as the producer of heavy milking daughters. He is richly bred, his pedigree speaks for itself. Sired by Chieftain 281 and his granddam out of Fannette and Bismarck. He is naturally hornless—is short-haired—vigorous. His kids give 4 and 5 quarts at first kidding and 6 quarts at second kidding. Service Fee, $10.00.
The "W" TOGGENBURG GOAT RANCH,
C. A. Ward, Prop.,
2131 Florence Ave, Huntington Park, Cal.

Believing that milk yield is our first consideration and that grade goats, if judiciously bred, will sustain their superior yield, have combined such strains as Andrias Hofer, Mark Antony, Excelsior, Tico and Chieftain in the De Lait family of goats. Results justify my belief. Have three generations of does giving more than five quarts, the last yielding 2250 pounds in ten months first kidding. If this appeals to you buy a buck with this milk record. Dr. J. F. Farmer, 1667 N. Lake Ave., Pasadena, California.

FOR SALE—I have 60 of the most handsome Toggenburg goats in Southern California, 20 doe kids, 1 to 5 months old. Registered from ½ to 15-16, all out of 4 to 6 quart milkers, these kids are all selected stock, 30 from 1 to 2 years old; now ready for their first breeding. All select and from heavy milk stock; most all registered, from ½ to 15-16. 10 big milk goats, 4 to 6 quart milkers; 6 of them registered. Price $50 to $150. Two pure bred registered Toggenburg billies for service, fee $3.50 and $5. U. B. CLEGG, 6210 S. Main st. Phone South 788. Postage for reply.

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BUSH Address J. N. Bush, President, Dept. M167 MOTOR CO., Bush Temple, Chicago, Illinois

The Goat's Milk Route

(Continued from Page 8)

series of beds in which to experiment with different crops to be cut and fed green, something no goat grower should neglect. Even her front lawn, of clover, was devoted to this purpose, and her "plant" certainly teaches valuable lessons in the conservation of space.

"Among numerous other things I learned," explained Miss Ray, as we surveyed her equipment, "was the fact that there are many ways of being in the goat business, all related in a measure, and yet each a distinct field of its own. Gradually my own little plot in the field to which I seem to have been assigned began to open up before me.

Expansion of Business

"Since I had to refuse to sell my goats over and over again, until it began to be fairly distressing to have to turn away anxious parents, who lived out of the reach of my modest

Mountain Range

Not infrequently a range-goat breeder who controls such range as this takes milch-goats on pasture, running them with his Angoras. There are vast areas of similar lands in California, unsuited for any other purpose.

neighborhood milk route, and to have the feeling that if I could only have sold them a goat I might have saved another baby, I began to look for a way out. It seemed to me that perhaps the supplying of the goats to supply the milk was just as much of a business as supplying the milk direct, so I began to work it out:

"Eventually I effected a sort of compromise, and did both. I raised goats to sell, even while I continued my dairy in a small way. I enlarged my sheds and runways to extend across the adjoining lot, as well as my own, and planted the front of the lot to forage plants which had proved themselves able to give a large yield and to bear continuous cutting. I started with reasonably good grade

—which of these—
the coat or the frock—
may we send you?
—or, wouldn't you like both?

By parcel post, prepaid—we'll send you either—or both—of these lovely garments—just as soon as we receive your order. It's a wonderful chance to be smartly, fashionably attired—so delightfully early in the season—at a price that you'd expect to wait for till the midwinter sales.

The sketches can only hint of the smartness, the graceful lines, the swagger style of these special models—each expressing the very newest style ideas—each fashioned from the handsomest materials of the season.

And the prices! When you read them you'll scarcely be able to believe that garments so low-priced can be as lovely as we say. But, then, wait till YOUR garments arrive—the prettiest in your neighborhood, then how delighted you'll be!

The coat—"Elmont"—(at the left)

—a swagger loose-belted model of all wool velour, in taupe, brown, shawl collar of seal fur rolls open or high, as you prefer—smart slit pockets are convenient—a rich fancy silk lining makes effective contrast; 48 to 52-inch length; sizes 16 to 46.

We'll send it for $58.50

The dress—"Endor"—(at the right)

The adaptable satin frock in a particularly charming style—with panels, caught under the hem—and trimmed with silk ostrich fringe at a high hem-line. A dainty note of white appears in a Georgette frilled vest; the frock may be had in sizes 14 to 44 in—black—navy—taupe or nigger brown. $45.00

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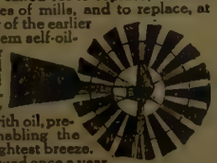
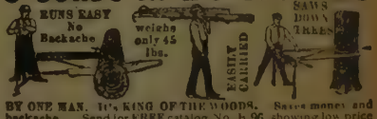


9 CORDS IN 10 HOURS



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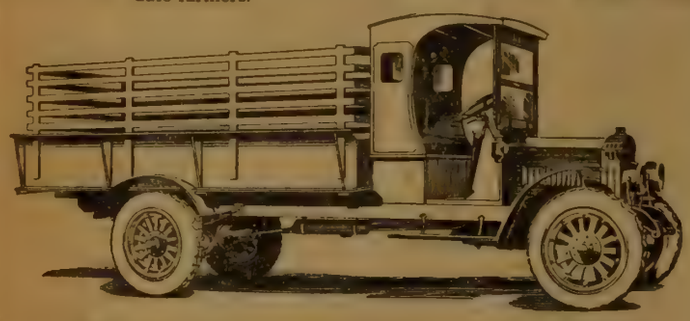
FISH Salmon in brine, 100 lbs., $11.00. Shipping weight, 165 pounds. Smoked Salmon, 20 lbs., $3.40. Dried Codfish, 10 lbs., $1.75. T. A. Beard, 4322 Winslow Place, Seattle, Wash.

HAWKEYE
MOTOR TRUCKS

THE picture below shows a Hawkeye Truck of a capacity of 3,000 pounds, equipped with a combination body that may be used for hauling stock or crops. This outfit has become very popular among up-to-date farmers.



Hawkeye Trucks are used for all kinds of hauling, but they are especially adapted for farm hauling because of high clearance, ease of handling and control, special farm body and satisfactory operation over rough roads and fields.

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For getting crops and live stock to market, you can't beat the Hawkeye. Write for prices and other information.

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where there is grass and weeds, and silt and TROUBLE.

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Speyer Bag Co.
869-873 Folsom St., San Francisco

(Continued from Page 29)

does, and with one pure bred doe, which is the mother of my little band of blue bloods.

"Of course when one gets into the line of raising pure bred stock, it proves a fascinating game as well as a lucrative business. When the show ribbons begin to appear at the front of the stall, it is hard sometimes not to throw 'utility' to the winds, and tread only the alluring pathway of the 'fancy.' But, someway, I don't believe in that altogether, and flatter myself that I have kept pretty level headed in that respect.

"Although," and little Miss Ray smiled almost apologetically, "if I made full confession you might think I was chasing rainbows, to say nothing of ribbons, right at this minute.

"Anyway, I find that I cannot at all supply the demand of those who come to me to buy goats. And I have made a firm agreement with myself that, if I do indulge to a certain extent in the game of playing up to standards of perfection (and, seriously, I believe that striving toward such standards is a very important pursuit, as a close study of the success of any breed of animals will show to the thoughtful stockman), I will also continue always to raise a fair proportion of the more modest strains of animals to supply the needs of the novice.

El Chivar's Gisele
Pure Swiss Toggenburg doe. This little animal made the record of 60 1-2 pounds of milk for five consecutive days' yield. Record for 24 hours' yield, 13 1-2 pounds.

"For, to my mind, the amateur is the important person in any expanding stock-growing industry. If he is satisfied and encouraged, the circle spreads. If he is not given a "square deal," the increase of public interest in the entire business eventually languishes. So it seems to me that the wants of the prospective goat-grower should not be left to be filled by a makeshift system of supply, while the really experienced breeders go off by themselves to play the game of gathering prize ribbons."

This far-sighted little woman proceeded then to show that if the only goats that are accessible to the new breeder at prices which he feels are fair, are the discarded breeding stock of advancing growers or goats which disgruntled amateurs and unfortunate experience pass on to him by way of getting even with the game, he will never join the ranks of boosters. And the experts, playing for high stakes, will sooner or later find that the gas has somehow escaped from the balloon.

On the other hand, she insists if all breeders make it their business to see that the newcomer, who so often is the father of the sick baby and anxious to become a devotee, is given real value for his money, there is every reason to expect a healthy growth of the industry for many years to come. "Almost daily," she says, "I see evidence of the need of the beginner for moderately-priced stock of honest quality. I think sometimes that one of the biggest possibilities for breeders might easily lie in a large production of does giving but a quart a day. How many families buy more milk than that? They should sell at perhaps $25 each. This may seem like heresy, coming from one in the ranks, but I have long believed that the greatest need at this development of the industry is for more mediocre does of steady production and long lactation period which could be sold at low prices. Without the converts made through such a medium it seems to me that the selling of six-quart does and better, at prices running into the hundreds of dollars, will be but a brief chapter.

Improvement Is Necessary

"At the same time, nobody believes more firmly than I that if a six-quart doe can be fed on the same ration as a two-quart doe, she will make the better investment at an approximately proportionate price. It is the old argument for betterment which has made modern livestock what it is, and has marked the advance in food production, away from razorback hogs and scrub, wild cattle. And to that end, the high-priced breeding stock must first be reared. Perhaps this belief amounts even to a weakness with me, because I am afraid," and little Miss Ray, the ex-schoolma'am, looked demurely guilty, "that I am a natural gambler. I do love to play a game for high stakes—and win."

But, right at that time she would say no more as to what her "high stakes" might mean. Only recently I learned that her latest "gamble" is a plunge in one of the most fascinating of latter-day romantic pilgrimages, recalling her reference to the love of school teachers for propinquity of goats. However, I am not at liberty to say anything whatever about the University Professor.

Importations Pending

As to the goat gamble, I can say that I know of a considerable nest egg which is soon to sail across the seas to foreign lands to join in a search for an ideal—a venture, Miss Ray devoutly believes, amounting to a crusade. Centering as it does, in her view of it, about the future saving of hundreds of babies, this pilgrimage of brave spirits who have overcome indescribable difficulties of international quarantine laws, and have still more to face in the year of travel now ahead, are crusaders, no less. And she says that she knows, too, that they will "bring home the bacon," which will be on the hoof in the form of a considerable band of the finest of Swiss goats—an undertaking which no breeders except Mr. and Mrs. Charles R. Bowman of Manchester Depot, Vt., have had the temerity to attempt. And with them will sail not only Miss Ray's nest egg, and her dreams of forthcoming blue bloods and blue ribbons, but likewise her prayers—for the sake of little babies.

Buttermilk Feeds

THE increasing use of buttermilk in poultry and animal feeding is one of the most interesting agricultural developments of the day. It is of interest to dairymen in that it provides a new and remunerative market for one of the important by-products of their industry, while hog-raisers and poultrymen particularly are affected because of the extremely valuable properties of buttermilk and buttermilk feeds. The use of dried buttermilk in commercial feed mixtures is becoming more and more general. Our readers will be interested in the following expressions from those who have had experience with this feed:

"I became discouraged after attempts to increase egg-production by the use of electric lights, because my hens seemed to be so overworked that they became run-down. However, I found that by using a buttermilk feed I was able to fortify their constitutions against the added strain and thus to bring my experiments to a successful conclusion."

"The use of buttermilk in the ration during the moult has proved to be a decided benefit to my flock. Some of my old hens did not go below 20 per cent egg production at any time during the moult when fed a ration containing buttermilk. Hens slow in commencing the moult can sometimes be given the necessary 'boost' to start them off again in egg production by simply adding buttermilk to the feed at the opportune time."

One of the most important properties of buttermilk is its proclivity for prevention of coccidiosis among young chicks. This disease has claimed hundreds of thousands of victims among the youngsters. It is agreed among leading authorities that buttermilk is the most satisfactory preventive and remedy for this condition.

Buttermilk seems to have the property, when fed to either hogs or poultry, of aiding digestion. It promotes assimilation of the balance of the ration, maintains a healthy condition of the digestive organs, cleanses the bowels and generally tones the system.

Berkshire Sale

The Western Berkshire Congress, composed of Western breeders, will hold a public sale of some 30 head of bred gilts and sows at the Los Angeles Live Stock Show on the afternoon of Wednesday, October 22, as part of the promotion work of Berkshires on the Pacific Coast.

The sale will be composed largely of animals from the Northern part of the State, with a number from leading herds of the South.

Southern Berkshire breeders appealed to President A. B. Humphrey of the Congress to hold this sale as a means of distributing a few more good individuals among the farmers and breeders of Southern California. J. Frahcis O'Connor of the Castleview Ranch of Santa Rosa is contemplating sending his State Fair Junior Champion sow through the sale ring.

A catalog giving the names, ages and breeding of the hogs may be obtained from the secretary, Frank B. Anderson, of Sacramento. Col. Ord L. Leachman will cry the sale.

Big S. F. Shows

San Francisco is looking forward to two big agricultural events: The California Industries and Land Show, scheduled for October 4 to 9, and the San Francisco International Live Stock Show, which will be held November 1 to 8. Gordon H. True is secretary of the latter. His offices are in the Lachman Building. Premium list and entry blanks are now out.

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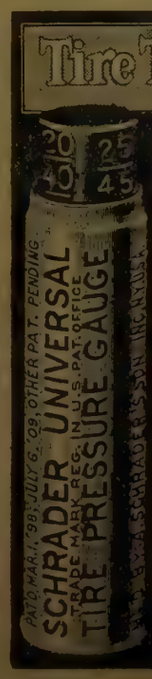

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Winter Garden Planting Chart

Plant now the garden crops which will grace your Christmas table. Some varieties of vegetables can be harvested every day in the year in many sections of the favored Pacific West; in fact, many vegetables grow better during the mild fall and early winter months than at any other season. See notes below for control of pests and for general seasonable pointers. With a few chickens and rabbits and a milch goat or two, the successful gardener can be independent of the H. C. of L. and the animals will consume the garden waste or excess produce.

By Charles L. Schufeldt

Kinds; Depth to Plant; Best Varieties	Time Required to Reach Maturity. How Much to Plant for One Family. How Often. ("Hardy" Means Stands Some Frost. "Tender" Means Stands Little or No Frost.)	How to Plant; How to Fight Pests; How to Store or Keep; How to Use for Table or Small Animals.
Beans—2 in. deep. "Broad Windsor."	Hardy. Plant 20 to 50 hills, three seeds each. Eat February to April.	Plant same as bush beans. Spray with "Black Leaf 40" for aphis. Shell green for soups, etc.
Beans—2 in. deep. Canadian Wonder (frostless regions).	Tender. Plant 30 to 50 hills, four seeds each. Eat in 8 to 10 weeks. Stands light frost only.	Plant in warm sections under screen influence or where frosts are very light. Have soil warm and moist.
Beets—1½ in. deep in light soil, 1 inch in heavy. Detroit Blood, Crimson Globe, Sugar Mangle.	Hardy. Matures for table use in 60 to 90 days, for greens in 40 days. Remains tender about 30 days. Plant for winter now about 50 feet of row. (More for goats and chickens.)	Be sure soil is filled with water before planting. Plant while moist and take over after planting. Sow thickly. Thin to 4 inches. Cook young beets and tops as greens.
Cabbage Set plants. Cannon Ball or Danish Ball Head, Copenhagen Market.	Hardy. Matures in 140 to 150 days. Set three dozen plants. (More for kraut or for goats and chickens.) See notes below about pests. Grow Chinese cabbage for salad.	Set 18 in. apart rows 30 in. Likes very fertile soil and steady moisture. Will not stand drought. Spray with arsenate of lead or hellebore for plant lice.
Cauliflower—Set plants. Cal. Pearl, Snowball; also plant Brussels Sprouts now.	Hardy. Matures in 100 to 130 days. Set two or three dozen plants for early spring use. Give Brussels Sprouts much water in rich soil.	Same care as for cabbage. Spray early for worms or for plant lice. Can some for summer months. Set only 3 to 6 plants of Brussels Sprouts. Feed leaves to poultry.
Carrot—½ inch. Danvers Half Long, Ox Heart, Early French. (Long Orange for stock.)	Hardy. Matures 60 to 90 days; remains good for six weeks or more. Plant four times a year any month except November to January when it sprouts very slowly. Plant 90 feet of row now. Have some ready to harvest at all times. "Carrots for health."	Plant in moist soil in shallow ditch made with hoe handle. Cover lightly and press; then brush over with loose soil. Do not sprinkle water in trench between rows. Thin to one inch. Feed surplus to rabbits and goats; tops to poultry.
Endive—½ inch. Green Curled.	Hardy. Plant August to April. Plant 10 feet of row each month. Matures in 10 to 12 weeks.	Rapid growth; rich soil. Matures as lettuce. Blanch as celery. Use as salad or cook as greens.
Kale—¾ inch deep. Tall Jersey, Thousand Headed.	Hardy. Matures in 60 to 70 days and remains good for year.	Same care as for cabbage. Use for greens and for poultry and rabbits and goat.
Kohl Rabi—¾ inch deep. Goliath, White Vienna, Purple Vienna.	Hardy. Matures in 70 to 90 days. Repeat planting every 60 days. Remains good about 30 days from first. Better than turnip.	Same care as cabbage. Grows quicker. Set plants 6 in. apart in rows 2 feet apart. Begin eating when 2 in. in diameter. Good for goats.
Lettuce—½ in. deep. Los Angeles Market best variety at this season.	Hardy. Matures in 7 0to 90 days. Sow few seeds in November. Transplant about 3 doz. plants now and 2 dozen in November.	Set 6 in. apart when 3 in. high. Rapid growth, abundant moisture insures good heads. Drought makes bitter and causes it to go to seed.
Mustard—½ inch deep. Chinese White; Chinese Green.	Hardy. Ready to eat as greens in 8 weeks. Plant 10 ft. or more of row every six weeks.	Give same culture as spinach or chard. Thin to 4 or 5 inches apart or transplant like lettuce. Seldom bothered with pests. Rich in vegetable salts.
Onion; Garlic—½ in. deep. White Queen is early Australian Brown is very good. White Globe Prizetaker, Red Weatherafield.	Hardy. Any month. Seeds better than sets (or grow own sets). Plant thickly. Two crops, one fall, one spring. Matures in 120 to 160 days.	Sow thickly and transplant for home garden. Use plenty of composted manure. Prepare soil thoroughly; firm seed bed. Plenty of moisture before sowing; steady moisture required.
Parsley—½ inch deep. Moss Curled.	Hardy. Any month. Sow 6 ft. of row twice a year.	Same culture as carrot. Will last a year where frosts are light.
Parsnip—½ in. deep. Early French or Devonshire, Hollow Crown.	Hardy. Matures in 90 to 110 days. Two crops a year. Plant half as much as for carrots.	Grows same as carrots. Requires no moisture. Improved by cool weather. Planted now, will remain good all winter.
Peas—3 to 5 in. deep in moist soil. Alderman, Yorkshire Hero, Telephone.	Hardy. This is good time to plant. Another crop in February. Two rows 40 feet or more to can. Rich soil.	Chicken wire trellis 4 ft. high before planting. More moisture than corn. Likes cool weather. Spray for plant lice and mildew. Will not stand drought.
Potatoes (Irish)—5 to 7 in. deep. White Rose, British Queen, American Wonder, Burbank.	Half Hardy. In most sections plant any month except October, November, December (any month in favored sections). Matures in 90 to 140 days. Plant as much as possible up to ½ acre. Most economic of vegetable foods.	Does not do well in extreme heat or drought. Steady moisture; deep, rich soil, well drained. May follow green crop turned under. Never fresh manure. (Compost the manure.) Select seed from heavy bearing, healthy parent stock. Treat seed. Spray for blight and insects.
Radish—½ inch. French Breakfast, Icicle, Mikado.	Hardy. Plant short row 6 feet each month all year. 24 to 36 days.	Rapid growth, plenty of moisture and rich soil make sweet, tender radishes.
Rhubarb—1 inch for seed. Wagner's Giant, Strawberry, Winter Crimson.	Hardy. Half dozen good plants. Lasts several years. Ready in 8 months from seed; 3 months from plants.	Deep, rich, sandy loam, well drained. Do not flood or cover crown with soil or water. Plant on slight ridge. Should have some shade.
Spinach—1 in. Prickly Seeded for winter, Long Standing, Round, New Zealand.	Hardy. Plant August to March. Likes cool weather. Plant New Zealand any time. Round fair for summer if kept moist. 20 ft. of row. Ready in 80 to 90 days.	Abundant steady moisture. Thin to 6 in. Do not pull up New Zealand by roots. It grows continuously but is slower to start. Is very rich in mineral salts.
Swiss Chard—1 in. Lucullus, Lyon.	Hardy. Any month except November, December and early January. 2 dozen plants for table (more for stock or poultry). Ready in 90 to 200 days.	Generous producer. Eat of outer stems. Cook as greens, eat stems like asparagus. Same culture as beets.
Turnip—½ inch. Early Strap Leaf, Early White Globe, Snowball, Rutabaga.	Hardy. September to April. Plant 30 to 50 feet of row, or broadcast. Repeat planting every 40 days after August. 50 to 100 day crop.	Absolutely steady moisture. Cool weather. Not too thick. Firm soil. Sudden changes in moisture mean failure. Rich soil.
Tomatoes—½ inch in seedbed. First Early, Rivers Bros. Early. Do not plant late varieties.	Tender. Plant at once in seed bed in warm exposure. Transplant to cold frame at time of first frosts. Set 8 inches apart in frame. Protect from frosts with paper or cloth. Set in open in early March to ripen in May.	Carry through winter in cold frame covered with cloth or oiled kraft paper on light frame. Keep hardy by daily exposure to sun. May use large lamp in bed on coldest nights. Have cover at least 18 in. above soil.

PEST CONTROL AND GENERAL POINTERS

In favored sections under ocean influence, tender vegetables such as potatoes and beans may be planted now, but such sections are very limited in extent.

This is the month to plan a hotbed. Tender vegetables may be grown in an easily constructed hotbed during November, December, January and February.

In interior valleys great care is required in getting plenty of water into the soil before planting and great care in cultivating after each irrigation to prevent soil baking hard and drying out rapidly.

We have selected varieties (in column one) suitable for a home garden. There are other good varieties. All vegetables give best results when their growth is rapid.

Never allow soil to bake and become hard on surface. As soon after irrigation or rain as soil will not stick to the tool, loosen the top soil so that it may dry and hold the moisture underneath, preventing surface evaporation.

Best not to irrigate too closely to the plants. Coax roots to go deep and far after moisture, insuring hardy root system.

One of the most important considerations for all gardeners is to keep soil well supplied with humus. A compost pile is good. A heavy crop of Winter Beans, or other legumes, spaded under improves the soil.

Every home gardener should have a few sacks of balanced commercial fertilizer on hand to feed growing plants. Small amounts encourage rapid growth.

Plant Lice (aphis)—Plant lice attack many plants, as peas, cucumbers, cabbage, etc. Spray them with the following: 1 tsp. "Black Leaf 40" to 1 gallon of water and one tablespoon of soap powder or yellow laundry soap. Touch every insect. Repeat spray in 10 days. If no hand spray is available throw spray on with whisk broom, using one-fourth more water.

Chewing Insects—Insects which eat the leaves can be poisoned with a spray of arsenate of lead paste. Use 1 oz. acid lead paste to 1 gallon of water or ½ oz. of powdered arsenate of lead.

In the Garden

Compost for Gardens

EVERY home gardener in city or in country should have facilities for composting manure and vegetable matter in order to make organic matter with which to increase the fertility of the soil.

A compost-pit is just as essential in the operation of the commercial market garden or the small fruit ranch or the poultry, rabbit or goat establishment as in raising a home garden. In any case, the use of compost means bigger yields and greater profits from the soils.

Poultry and Rabbit Manure

Considering 100 hens as a unit, scatter two or three pounds of acid phosphate over the droppings each day. Remove droppings twice or three times each week. Loam and wood ashes may be used as a substitute absorbent if acid phosphate or rock phosphate cannot be obtained. Place the manure in a sheltered, shallow cement or redwood bin and keep moderately moist. Spade over frequently and if bacteria have caused complete decomposition use in the soil in 60 days or more. Never permit heating.

Collect the rabbit droppings daily and cover with an absorbent. A good plan is to sprinkle a handful of rock phosphate or some moist soil over the droppings under the hutch daily. Good hutches are so arranged that the droppings all roll to one place and fall through to the ground. It is well to have a tight redwood-lined pit to catch the droppings. In this pit the absorbent material may be scattered. Be sure to fork over the compost frequently.

Dairy or Horse Manure

Absorb all liquids and urine with straw or other refuse. Acid phosphate or rock phosphate may be used with economy. Have two sheltered shallow cement bins for compost. The one in which manure is oldest can be brought to an even decomposition by bacterial action before manure is removed to the soil. Keep moderately moist and fork over frequently. Of course if it is practical to haul all manure with liquids absorbed in bedding to the fields daily, that is the best method, providing planting is not to be done immediately or providing plants are not already growing. It is not safe to put fresh manure and liquids on growing plants.

Garden Compost

Have two compartments in the tight, screen-covered compost bin about two feet deep. Into the bin place manure of any kind, mix in a little acid or rock phosphate as an absorbent if possible. Use a little loam and ashes. Along with the manure use leaves, grass clippings, vegetable tops, weeds, other garden refuse and garbage. Fork over frequently, keep moist but not wet. Permit no heating or fire-fanging. Work the mass into the soil as soon as it is decomposed.—C. L. S.

Every home gardener should have a few sacks of balanced commercial fertilizer on hand to feed growing plants; even small amounts encourage rapid growth. Sprinkle it over the soil after irrigation and rake it in.

One of the most important considerations for all gardeners is to keep the soil well supplied with humus. A compost heap is valuable. A heavy crop of Windsor beans, or other legumes, spaded under, improves the soil.

In planting tender varieties, consider the time of your first severe frosts and also the time required for the plant to mature.

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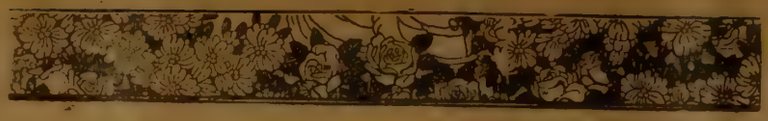

Your Garden of Flowers

Nature, exerting an unwearied power,
Forms, opens and gives scent to every flower;
Spreads the fresh verdure of the fields and leads
The dancing Naiads through the dewy meads.
—Cowper.

By Helen Temple

THOSE who live in the interior, coast, desert and mountain sections of the State should begin potting their more delicate plants in October for the green-house or windows. Do not use pots that are too small. It is not economical because of the time required in repotting. If it is possible, use leaf mold for your pot-plants.

In the mountain and desert sections every plant and flower should be protected during the winter, so I would advise potting them this month, if there is no other way to protect them. In the semi-tropical and bay regions it is not necessary to take up any of the plants during the winter if they are protected from severe winds. Nevertheless, even in these belts, it is often advisable to pot the choicest and most delicate plants, especially if they are rare. One may never know just when a "never happened before" frost might occur. In one of the choicest localities along the Southern Coast, where "it never frosted," a year or two ago a frost came along and spoiled things in great shape. October is a month when plants can be transplanted with much more success than at any later date.

In some localities sweet-peas can be planted this month, and they will be blooming at Christmas time. This can be done along the Southern Coast and even as far north as San Francisco, but it is not advisable to attempt it if you live where Christmas is quite apt to be a frosty one. They may do well, but one hard frost will spoil the vines for blooming. I expected to plant some sweet-peas in October here in the Sacramento Valley, but a seed-man advised me to wait. If the first buds are frosted the vines never produce flowers of any consequence, even though the vines are not killed. Nevertheless, we expect to sow an acre to sweet-peas in December for seed. Any one who has a spare acre or two, should contract for sweet-peas this month, if it is desired to "try a hand" at the raising of them for seed.

Seed Gathering This Month

Seed gathering should begin in October. Save the seed from the best specimens. Many of us often try to get quantity instead of quality, and save seed from every flower in the garden that has seed. I have done this myself, but have decided that it is not a wise practice. A friend of mine has built up her garden wonderfully by watching her flowers carefully, marking the most perfect specimens and gathering seed from them only. Mark each package of seed carefully, and do not let the seed become mixed at any time.

Store the Bulbs This Month

Dig the bulbs that are ready for digging, and store or set them in an out-of-the-way corner. If they are to be stored, shake the soil from them and separate. Then lay them in two layers in flat boxes and place in a cool, dry place. They need no other packing, but care should be taken that they do not become too dry, or wet.

If you have a little spot that cannot be easily irrigated, sow it with wild-flower seed this month, and the early rains will bring them up. One can not tell just when the rains will come, but it is usually quite showery in November. California had rather freakish weather last year, but usually we depend upon the weather man's verdict for rains in November, so why not "take a chance" as the ranchers say? Prepare the soil as you would for any other seed, and do not cover them more than enough to hide them. After the seeds are up and thoroughly established they will take care of themselves, and will re-seed themselves year after year. There is the California poppy that everyone loves. Then there are others such as the Blazing Star, Baby Blue-eyes, California Phlox, Tidy Tips, Farewell-to-Spring, Blue Lupine, Blue Gilia and the Spotted Nemophila. You can buy these seeds at from 25 to 50 cents an ounce at a seed store that carries a complete line of all California flower-seeds and bulbs. A pound of seed will sow an acre. The Nemophila, Baby Blue-eyes and "Farewell-to-Spring" do well in shady places.

Seeds to Plant This Month

Pansies, the most loved flower of the little children as well as we grown up children, can yet be sown this month. Sow in a box and then transplant to a protected spot in the garden. The largest flowers are produced by a liberal application of well-rotted manure, and two transplantings.

Stocks can be sown this month. Sow the seed in flat boxes and transplant to a sunny location after they are past the tender age. The small, delicate plants usually produce the best doubles.

Sow some Centaurea this month. There is the new Double Blue, which is an improvement over the old single variety. These old-fashioned flowers are found in yards of all descriptions, especially the well known Dusty-Miller, with its silvery foliage. This variety of Centaurea will grow under almost any conditions.

Larkspur sown this month will bloom in the spring. There is a new shade of the double variety of Larkspur. It is a bright, rosy carmine, and cheers up the whole garden and brightens the house, when cut.

Mignonettes can be sown in the garden this month, or you can start some in your window garden. Allen's Giant Goliath sometimes produces spikes more than a foot in length that are enormous in size. The Golden Machet is a very pretty variety. As its name implies, it has a golden color. The Mignonette is easily grown and must have a place in every garden to help complete it. A French woman once told me the story of the Mignonette, which means, in French, "little darling." The story that she told me was a very sweet one; then shortly afterward, as I was walking down the street, I heard some one call, "Mignonette, Mignonette." Naturally, I turned to see who "Mignonette" was. She was a very black and very tall colored girl. I was disappointed and it has taken me a good many summers to forgive that negro mammy for naming her "chile" Mignonette, even though I did learn afterwards that the entire family was a "beautiful flower garden," including Wistarias and Lilies.

Sow some Calliopsis. They will grow almost anywhere, and are use-

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Will bring you immediately some delightfully interesting literature describing and picturing the newest, choicest creations in Furniture and Home Furnishings.

It is part of the business of this great Home-making Institution to give Suggestions and Ideas about home betterment to home loving people everywhere in the West. A request incurs no cost or obligation. We count it a privilege to be called upon for assistance of this kind.

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With showings of merchandise from every department of this great store. This book also explains in detail the Liberal Mail Order Policy of Barker Bros.

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ESTABLISHED 1880
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THE BEET SUGAR LIME FERTILIZER

costs $7.00 to $8.50 per 2,000 lbs. in bulk, f. o. b. cars points north of Rialto, south of Red Bluff. It is most readily available form of lime, being burnt, hydrated and composted in perfectly precipitated form, quick acting, immediately effective. Further, contains percentage of moist organic matter, analyzing a little nitrogen, potash, phosphoric acid, also trace of sulphur.

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SHEEP MANURE

largely from cottonseed, alfalfa meal and other rich feeding.

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WE WANT

10,000 Sacks Grain.
5,000 Sacks Dried Fruit.
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2,000 Cases Extracted Honey.
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10,000 Boxes Green Fruit.
100,000 Head of Dressed Turkeys for Thanksgiving and Christmas.

Will buy outright or handle on consignment for Spot Cash.

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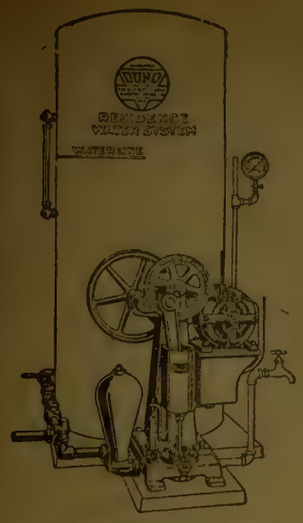

"DURO" Deep Well Systems

JUST the thing to bring suburban or country home right up to date. Pumps water from wells, where depth to water level ranges from 22 to 150 feet, and supply it under pressure for all purposes about the house or grounds.

"Built like a battleship," economical and entirely automatic in operation.

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69 Fremont St. SAN FRANCISCO — 425 E. Third St. LOS ANGELES

We have some good territory for live dealers

Direct to the Consumer

Nutritive, Wholesome Food

BUY IN LARGER QUANTITIES AND SAVE MONEY

Selected Smoked California Herrings, 48 tins of 15 oz. net.....$8.90

Selected California Sardines, 48 tins of 15 oz. net.....$8.50

We pay freight to your nearest railroad station. Cash with order.

Send us 60c in stamps for 2 sample cans.

Ask for price list of Dried Fruit, Honey, Olive Oil, Etc.

California Pure Food Co.

352 DRUMM ST., SAN FRANCISCO, CAL.

Now Wrecking

Large four-story frame building, northeast corner Sacramento and Van Ness ave. 300,000 feet choice lumber.

$100,000 Residence, Jackson and Van Ness Ave. Hardwood.

New and guaranteed. Full line of plumbing material, lumber, ranch accessories, electric fixtures, doors, windows, etc., at money saving prices. Satisfaction guaranteed or money refunded.

50 wardrobes, double door mirror, hardware complete, $7.50 to $10.00.

3 cars new mill goods.

Get our estimate on material for entire building.

SYMON BROS.

Wreckers

Block 11th & Market Sts., San Francisco. 21st & San Pablo Ave., Oakland

ful for cutting, as well as for beautifying the garden. The Tom Thumb variety grows only to the height of six or seven inches; yet the flowers are as large as those of the tall variety. The blooms are a deep yellow and have dark, crimson centers.

Start rose and carnation cuttings this month in sections where the warm weather is over. Any of the hardy annuals and perennials may be started this month in the semi-tropical, coast, bay, and a part of the interior regions, if they are protected from the strong winds.

Set Out Some Bulbs

We can set out some Callas and Easter Lilies, Iris, Narcissus, Tulip, Hyacinths, Freesias, Ranunculus and Anemones from October until January with good results. October is usually a pleasant month to be out of doors and I think it is nice to have an excuse to slight the dusting and hurry right out to the garden work. Anyway, we can dust all winter long, and as we can't plant and putter in the garden everyday in winter, let us "make garden while the sun shines. October is our most pleasant month here in the Sacramento Valley. I explained last month just how to plant the bulbs.

The State Fair

(Continued from Page 7)

wonderful individuals were on hand.

The sheep show was weak in numbers. A few good individuals were seen, notably the Rambouillets entered by Bullard Brothers. Hampshires, Cotswolds and Cross-breds also were represented.

The poultry show was very comprehensive, but here again the effect of the strike became apparent, as the entries from the South were seriously reduced. There was an unusually big showing of rabbits and pet-stock.

The exhibit of dairy machinery, in view of the present labor situation, was a center of interest, and milking-machine dealers reported that sales were exceeding their expectations. There are hundreds of milking-machines in use in the State today.

Spirit of 1919

The usual pink lemonade and popcorn and excited small boys and weary mothers and barkers and merry-go-round were very much in evidence. The amusement features, including the races, were enthusiastically patronized. Yet there was apparent more of a desire to learn—to take advantage of the educational value of the great fair. Whether this spirit is the direct result of the war or merely a development—an improvement over old-time methods—it is difficult to determine. But the fact remains that every year the quality of the annual show improves, the rivalry between exhibitors becomes keener, and the attitude of the visitors becomes more serious. Yet, "everybody had a good time."

Change of Name

The name of the Kellar-Thomason Company, well known Los Angeles designers and manufacturers of irrigation systems and appliances, has been changed to Martin Iron Works. This concern is planning a great expansion of business to meet the growing demand for improved irrigating equipment.

Built for Country Roads

What the Patriot Did at Walla Walla

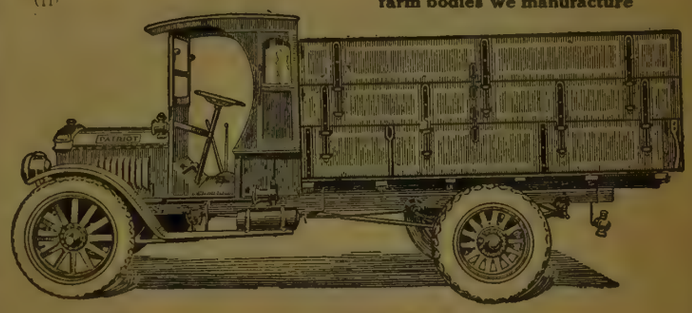
A few weeks ago a big Farm Power Demonstration was held at Walla Walla, Wash., attended by about 40,000 people. At this Demonstration Patriot Trucks were the *only* rear-driven trucks that went over the hills in plowed ground under full loads.

In fact, the performance of the Patriot over plowed ground, rough country roads and mountain trails was so wonderful that the International "Movie Man" followed it with his camera, and Patriot Trucks were featured in motion pictures all over the country.

PATRIOT

(11)

One of several styles of farm bodies we manufacture



Farm Trucks

Patriot Trucks are becoming well known and extensively used in California.

The first load of wheat moved to market in California this year was hauled in a Patriot Truck.

Investigations by the United States Department of Agriculture prove that Motor Trucks cut the cost of hauling grain from 33 cents per ton per mile to 15 cents per ton per mile. This is the reason wide-awake farmers are adopting the truck.

HEBB MOTORS COMPANY
Manufacturers
1371 P Street Lincoln, Neb.

Built for Farm Loads

MAKES HENS LAY

LACTEIN

CONDENSED BUTTERMILK

FOR HOGS AND POULTRY

MAKES HOGS PAY

Buttermilk Is Nature's Food and Tonic

Lactein is pure buttermilk as it comes from the churn, pasteurized, superscoured and condensed. It contains all the health giving food and tonic values of the original buttermilk without the useless bulk of water. On account of its high lactic acid content it will keep almost indefinitely.

Lactein is now recognized as one of the most necessary food digestive agents known for both growing hogs and poultry, due to the large amount of lactic acid it contains. The lactic acid aids digestion and assimilation, causing the hog or fowl to digest all the good from the grains given them to eat, and to eliminate all the dead and disease matter from the digestive organs, thereby promoting growth and preventing disease. Lactic acid is considered the best tonic, appetizer, liver and bowel regulator known for hogs and poultry.

COSTS LESS THAN 2c PER GALLON TO FEED

One gallon of Lactein mixed with thirty gallons of water and fed with the usual grain feed will show greater gains than from feeding the grain alone, besides it will keep the hogs and poultry healthy and their appetites keen.

If your dealer does not handle Lactein, write us for our booklet and prices.

LACTEIN COMPANY
900 E ST., MODESTO, CALIF.

YOUR SOIL NEEDS

HUMUS AND NITROGEN BACTERIA, MELILOTUS INDICA SUPPLIES BOTH.

Now is the time to plant it. Buy your seed from

AGGELER & MUSSER SEED CO

620 S. Spring St., Los Angeles, Calif.

Buy only Melilotus seed that has a quality tag on each sack. It protects you against the low germination seed so general on the market this season. This seed is above 99% pure and above 90% germination.

HELPFUL HINTS for THE HOUSEWIFE

Edited by Isabel Sinclair

The Home is the Hub of the Universe

Dear Friends:

Many a woman, brought up to regard housework as simple drudgery, yet really not caring for any vocation, keeps herself discontented in mind and ill-of-body by failure to recognize the fact that home-making is a science worthy of her best study and application. It is easy, in business or any other kind of work—in the conduct of a farm, for example—to become a slave to details and the part of the work that is monotonous. By allowing her mind to dwell upon the unpleasant parts of the housekeeper's task, any woman may reach the conclusion that there is nothing interesting about her work.

Yet domestic science is a branch of learning with almost limitless possibilities. There are better and more scientific ways to do almost every one of the multitudinous tasks of the wife and mother. It is her province to operate her business—that of buying supplies for the family and keeping the wheels of home-life well oiled and running smoothly—in the most efficient and successful manner. Many a discontented woman, if she would study and acquire vision, could find in her home the very opportunity for self-expression and development that she imagines has been closed to her, if—

IF, she is the fortunate possessor of a husband who gives some thought to her health and happiness and strives to provide labor-saving devices and comforts to lighten the burden of her every-day routine.

With such encouragement and with her interest aroused by study of advanced domestic science under the leadership of trained home-demonstration workers or educators, many a feminine heart could be relieved of an apparent burden of woe. Home-making is an art and a science. To be well-versed in its various branches is a goal worthy of attainment by any woman, and the surest source of happiness for those to whom the ways of business or professions are closed, inaccessible or distasteful.—Isabel Sinclair.

Cinnamon Rolls

Sift together the following ingredients:

2 cups flour.
1 tablespoon sugar.
½ teaspoon salt.
2 teaspoons baking powder.

Cut in 2 tablespoons fat—butter, lard or Crisco. Mix to soft dough with milk. Roll ½ inch thick, spread with melted butter, sprinkle thickly with cinnamon and sugar. Roll like jelly roll, cut crosswise into inch slices, put in greased pan, brush tops with milk or white of egg, sprinkle with sugar and bake in hot oven 8 to 10 minutes.

Kitchen walls should be painted so that they may be wiped with a damp cloth, making cleanliness possible without great demand on strength and without the disarrangement caused by whitewashing or calcimining.

Secure buttons, fastenings, etc., on ready-made garments before wearing.

Cotton covers put over the garments on hangers will preserve the freshness of waists, dresses and coats worn only occasionally.

Don't run the machine when the presser foot is down and there is no material in the machine, as this roughens the underside of the foot and blunts the feed.

Sewing on Snaps

When the snap fasteners are "buttonholed on" they do not pull off easily, and in many instances they will hold better. Clumsy sewing often bunches the thread and prevents the fastener from closing securely, particularly with the small press button.

Use a single thread when sewing on the fasteners. Having located the position of the snap, take two or three stitches in the material to fasten the end of the thread. Sew through each hole four or five times, putting the needle into the material at the edge of the snap and bringing it up through t he hole in the snap.

Throw the thread around the needle in the direction in which you are sewing. This should be from right to left unless one is left-handed. Fasten the thread securely by taking three or four small back stitches as close to the fastener as possible. When sewing on the upper half of the fastener be careful not to take the stitches through both thicknesses of material so that they will show on the right side.

Danger! Careful!

The use of gasoline and benzine for cleaning always is dangerous because they explode and take fire so easily. Never let a careless person use them and always note these precautions:

Use out-of-doors; in the shade; away from flame or fire and in a cool place; never store them in the house.

Mark spots with white thread; otherwise they are hard to find after the whole garment is wet.

Immerse the garment in the bath. Take out spots by rubbing very lightly between the fingers.

Wash as you would with water—a hand washing machine is excellent.

Rinse in clean liquid, changing it until it remains clear. If too little is used, the garment will look grimy.

Dry out-of-doors.

N. B.—Used gasoline may be strained through muslin and used again for the first washing, but never for the final rinsing.

Imagination

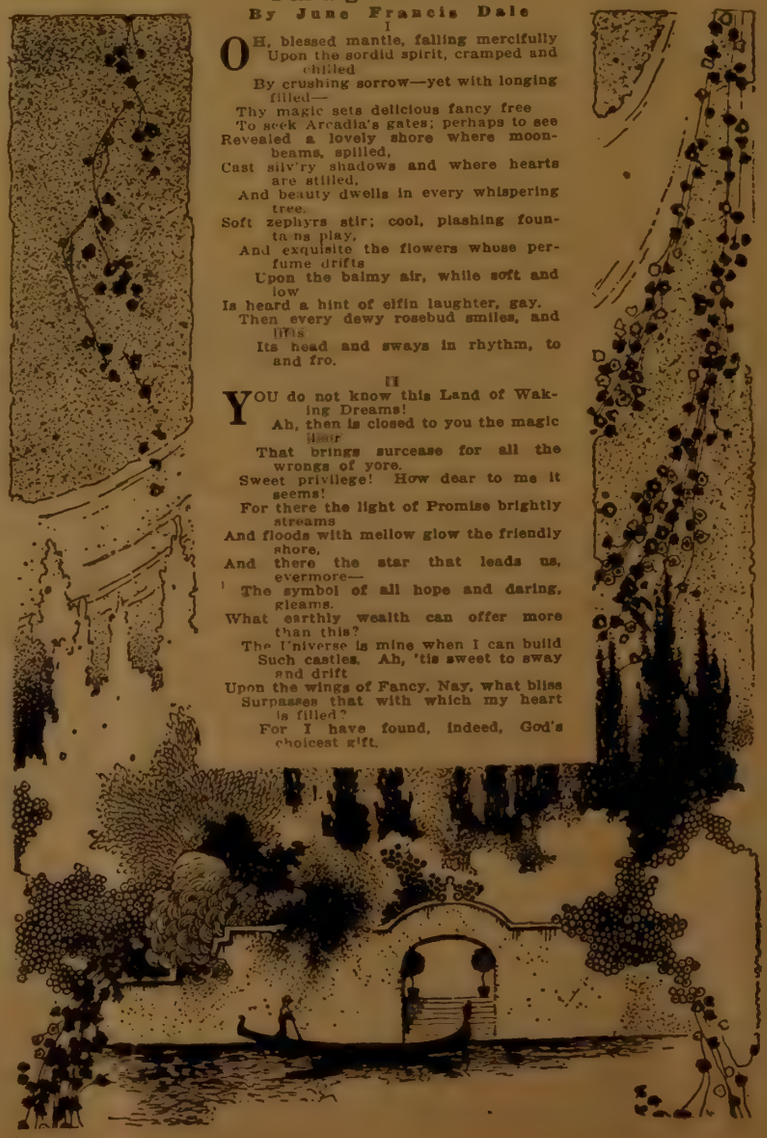
By June Francis Dale

I

OH, blessed mantle, falling mercifully
Upon the sordid spirit, cramped and chilled
By crushing sorrow—yet with longing filled—
Thy magic sets delicious fancy free
To seek Arcadia's gates; perhaps to see
Revealed a lovely shore where moonbeams, spilled,
Cast silv'ry shadows and where hearts are stilled,
And beauty dwells in every whispering tree.
Soft zephyrs stir; cool, plashing fountains play,
And exquisite the flowers whose perfume drifts
Upon the balmy air, while soft and low
Is heard a hint of elfin laughter, gay.
Then every dewy rosebud smiles, and lifts
Its head and sways in rhythm, to and fro.

II

YOU do not know this Land of Waking Dreams!
Ah, then is closed to you the magic door
That brings surcease for all the wrongs of yore.
Sweet privilege! How dear to me it seems!
For there the light of Promise brightly streams
And floods with mellow glow the friendly shore,
And there the star that leads us, evermore—
The symbol of all hope and daring, gleams.
What earthly wealth can offer more than this?
The Universe is mine when I can build
Such castles. Ah, 'tis sweet to sway and drift
Upon the wings of Fancy. Nay, what bliss
Surpasses that with which my heart is filled?
For I have found, indeed, God's choicest gift.



Making Pickles

Pickle time is here. Try some of these recipes for a change:

Olive Oil Cucumber Pickles

One hundred small cucumbers, one quart button or small white onions. Wash and wipe dry, but do not peel cucumbers. Slice both vegetables thin, sprinkle with one-half pint salt; put into bag or collander to drain over night. In the morning put over fire with enough vinegar to cover. Let come to a boil. Add peppers, celery seed and mustard seed to suit taste. Add one half pint olive oil. Seal while hot.

Mustard Pickles

Two quarts green tomatoes, two quarts small cucumbers, two quarts small white onions, one half dozen bell peppers, one medium sized head cauliflower. Wash and cut vegetables in small pieces, rejecting seeds of peppers. Cover with two quarts of water and one-half cup salt. Let stand one hour, bring to boiling point and drain. Mix one half pound ground mustard, one cup flour, three cups sugar, one tablespoonful celery seed. Mix with two quarts vinegar and cook until thick. Add vegetables, boil 15 minutes and seal in jars.

Indian Relish

Chop fine two quarts cabbage, one quart green tomatoes, three large onions, one green pepper. Add two tablespoonfuls white mustard seed, one tablespoonful celery seed, four tablespoonfuls salt, one pound sugar, one quart vinegar. Simmer one hour and seal while hot in sterilized jars.

Tomato Catsup

Two quarts well ripened tomatoes. Wash, boil and strain to remove skins and seeds. Add two tablespoonfuls salt, two cups vinegar, one teaspoonful cayenne pepper, one tablespoonful paprika (may be omitted), two-thirds cup sugar. Cook until thick. Pour into sterilized bottles. Put corks in tightly and dip top of bottle in hot paraffine.

Cucumber Pickles

Soak small, whole cucumbers in a brine made in the proportion of two cups salt to one gallon of water for 24 hours. Pour off brine, heat to boiling point and cover cucumbers with it again, letting them stand 24 hours. Remove cucumbers from brine, wash in clear, cold water and cover with vinegar to each gallon of which has been added one tablespoonful alum, two tablespoonfuls cloves and allspice, a small horseradish root cut in pieces and one-fourth teaspoonful cayenne pepper. Pack in jars. Ready to use in one week.

To Wash Corduroy

Corduroy is a kind of cotton velvet which may be washed providing it is not rubbed, squeezed or ironed. If it is made up at home, stitch the seams with a loose stitch to prevent puckering when washed. Before laundering babies' coats or other lined garments loosen the lining at the bottom to avoid bagging. Use a solution of mild soap, or for dark colors which may streak or fade, a solution of soap bark. Souse the garment up and down in the soapy water, changing the water as it becomes soiled. Rinse in several clear waters until no more dirt and soap come out. Hang the garment up dripping wet and so that it will dry in the shape in which it is worn. Dry in the wind if possible. When dry brush briskly to raise the nap.

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, "Examiner" Building, Los Angeles.

2782-2993—A Stylish Gown

Waist 2782 cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Skirt 2993 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inch waist measure. The medium size will require 7 yards of 40-inch material. Width of skirt at lower edge, about 1⅝ yards. Two separate patterns; 10 cents for each pattern.

2990—Child's Dress

Cut in 5 sizes: 2, 4, 6, 8 and 10 years. Size 6 requires 2½ yards of 36 inch material. Price 10 cents.

2976—Practical Suit for Small Boy

Cut in 4 sizes: 3, 4, 5 and 6 years. Size 4 requires 2¼ yards of 44-inch material. Price 10 cents.

2980—Dress in One-piece Style

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 4½ yards of 40-inch material. Price 10 cents.

2992—A Popular Style

Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 5⅛ yards of 36-inch material. Width at lower edge is 1⅞ yards, with plaits drawn out. Price 10 cents.

2974—A Good Work Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42 and extra large, 44-46 inches bust measure. Size 38 will require 5⅛ yards of 36-inch material. Price 10 cents.

2726—Girl's Dress With Guimpe

Cut in 5 sizes: 4, 6, 8, 10 and 12 years. Size 8 requires 2¼ yards of 27-inch material for the guimpe, and 2¾ yards for the dress. Price 10 cents.

2982—A Pleasing Dress for the Growing Girl

Cut in 4 sizes: 10, 12, 14 and 16 years. Size 12 will require 6 yards of 27-inch material. Price 10 cents.

2650—A Good Service Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5⅞ yards of 44-inch material. The skirt measures about 2 yards at the foot. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for our up-to-date fall and winter, 1919-1920 catalogue, containing 550 designs of ladies', misses' and children's patterns, a concise and comprehensive article on dressmaking; also, "Some Points for the Needle," illustrating 30 of the various simple stitches. This book contains many valuable hints for the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following paterns:

Pattern No.....Size.....

Pattern No.....Size.....

Pattern No.....Size.....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

Durable-DURHAM Hosiery is a product of industrial democracy—never of Child Labor. We have no strikes or lockouts.

The right hosiery for all the family —for every season—for work, dress, or play

HOSIERY for every one in the family that is made thick and warm for winter—and light and cool for summer, but always of honest wearing value—and always good-looking. Every pair has real value. Longer wear at reasonable cost means true economy. Not only in the money saved—but the time that is saved in less darning.

Right now, thousands of men and women are buying Durable-DURHAM fleecy-lined hosiery for winter. Every pair is full of warmth and full of wear. This hosiery is comfortable to wear—and has a fine appearance.

DURABLE DURHAM HOSIERY

FOR MEN, WOMEN AND CHILDREN

MADE STRONGEST WHERE THE WEAR IS HARDEST

The strong reinforcing at point of greatest strain gives extra months of wear to Durable-DURHAM Hosiery. Styles for men and women include all fashionable colors and come in all weights from sheer lisle to the heavy fleecy-lined hosiery for coldest weather.

Every pair of Durable-DURHAM is made right. Legs are full length; tops wide and elastic; sizes are accurately marked. Soles and toes are smooth, seamless and even. The Durham dyes will not fade.

Ask for Durable-DURHAM Hosiery and look for the trade mark ticket on each pair. Your dealer should have Durable-DURHAM. If you do not find it, please write to our sales department, 88 Leonard Street, New York, giving us the name of your dealer.

DURHAM HOSIERY MILLS, Durham, N. C.

Sales Offices: 88 Leonard Street, New York

HIKER

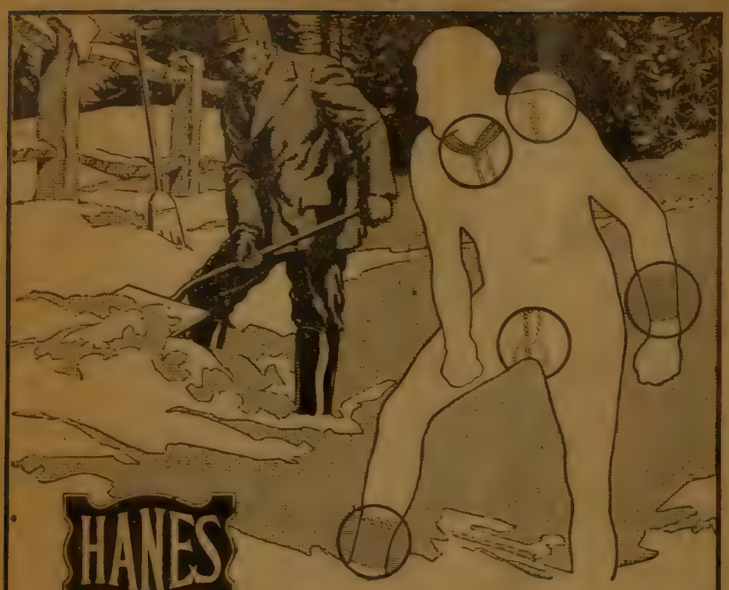
An extra warm and long wearing sock. Double fleecy-lined throughout. Full of warmth and full of wear. Strongly reinforced heels and toes. Black only.

run-STOP-Start

The trials of driving in the traffic prove the quality of Red Crown gasoline. Look for the Red Crown sign before you fill.

STANDARD OIL COMPANY
(California)

The Gasoline of Quality



ELASTIC KNIT
UNDERWEAR

GUARANTEE—We guarantee Hanes Underwear absolutely—every thread, stitch and button. We guarantee to return your money or give you a new garment if any seam breaks.

Greatest underwear value in America at the price!

You can't get greater warmth or better workmanship or more comfort or *more actual wear* than every suit of Hanes winter weight underwear for Men and Boys surely will supply!

Hanes is made in winter weight Union Suits and Shirts and Drawers. Illustrated here is the staunchest, most comfortable, wear-resisting union suit ever sold at the price.

Hanes Union Suits have the most desirable and dependable features—unbreakable seams; reinforced, non-stretching buttonholes *that last the life of the garment;* tailored collarette that cannot gap; shape holding elastic shoulders; elastic knit wrists and ankles; pearl buttons sewed on to stay. And, a closed crotch *that stays closed!*

Hanes Shirts and Drawers have the same desirable quality; perfect workmanship and features. Drawers have the durable, snug-fitting 3-button sateen waistband.

Union Suits for Boys in quality, cozy warmth and workmanship are unsurpassed at the price! Reinforced at all buttonhole and strain points. In fact they duplicate Hanes Union Suits for men, with added fleeciness. Made in sizes from 2 to 16 years. Two to four year sizes have the drop seat.

If your dealer cannot supply "Hanes" write us direct.

P. H. Hanes Knitting Co., Winston-Salem, N. C.

New York Office, 366 Broadway

Warning to the Trade—Any garment offered as Hanes is a substitute unless it bears the "Hanes" label.

Hardy W. Campbell's valuable book, "Progressive Agriculture," is being offered for sale, including three years' subscription to Orchard and Farm, for $1.25. Mail your order today.

PURE HAWAIIAN CANE MOLASSES PORK PRODUCTION

By actual test will increase pork production five-tenths pounds daily over a barley and tankage feed, yet it sells for less than half the price.

MILK PRODUCTION

One of our customers writes:

"We are out of molasses and our cows are falling off in their milk badly, hence we would appreciate immediate shipment. Kindly ship us two tons more in addition."

We supply it in barrels or tank cars for shipment anywhere.

Attend the California International Livestock Show, San Francisco, November 1 to 8.

W. H. YOUNG COMPANY,

Holbrook Bldg., San Francisco.

What Boys and Girls Are Doing

A CHIEVEMENT DAY is a day set aside at the end of the season in each community when all members of Boys' and Girls' Clubs of the Agricultural Extension Service of the University of Arizona take final reckoning of their season's achievements. Parents, leaders and boys and girls meet to measure their accomplishments and enjoy a general good time.

Indicating the interest shown in the club work, Achievement Day at Pima, Graham County, brought out over two hundred and at St. David, Cochise County, about one hundred and fifty. Ask the fathers and mothers of the boys and girls enrolled in club work in Arizona what they think of club work and they will say that it is one of the most valuable features in agricultural development.

Through clubs in canning, sewing, pigs, cotton, gardens, corn, cow testing, poultry, etc., better farmers and housewives are being trained, and better citizens made.

Raising "Bum" Lambs

Raymond Hopkins, a member of a Summit County, Utah, boys' and girls' sheep club, collected 44 orphan lambs from passing sheep herds last year. He paid an average of $1 for each and fed them milk and alfalfa, which cost him $44. The value of the lambs in the fall was $440 and the net return on the bunch was $352.

In spite of the hard luck she encountered raising her flock of orphans, Cecelia Carvey, a Nevada girl, cleared $60 on them. Last spring a nearby sheepman offered to give this club girl all the orphan lambs of his flock and to furnish the milk to raise them if half were returned to him when they were large enough to survive in the field without coddling.

By the middle of April the little girl was looking after 60 orphans. For six weeks she kept them housed, feeding them five times a day. By the advice of her father they were put outside in a pen the middle of May. It turned cold within the first 24 hours, several died during the night and more the following days.

As they grew older, the amount of milk given and the number of feedings a day were decreased until they were finally weaned. Thirty big, husky lambs survived, to be divided between their original owner and the club girl. The 15 which were her share for raising were sold for $4 apiece.

It Is Easy to Earn Thrift Stamps!

"JIMINY CRICKETS!" fellows and girls, we didn't know there were so many ways to earn money until we made that announcement in the September number of Orchard and Farm, stating that we would give four thrift stamps for each "How I Made Money" letter published.

Now, we can only print two of these letters this month, but we are going to continue the offer and next month we will probably have more space. You see, we have such a large magazine that we have to "make up" part of it (that is, have the type "set" and the pages arranged) long before the date when it is mailed. Your letter may appear in the November number!

The first one to receive a prize signs the name, "H. Fuller." Now, we don't know whether this is "Henry" Fuller or "Hortense Fuller," but we'll just print it as it was written, and you can judge for yourself as to whether the writer had a clever idea for making money:

"To Orchard and Farm:

"My unusual way of earning money is by supplying food for rabbits. I raise carrots. Rabbits eat them, tops and all. I also gather choice weeds and grass and let it dry, as rabbits like that. Our groceryman saves for me all the waste cabbage, lettuce, etc. Afternoons, when school is out, I call on my many customers. Each one buys a few pennies' or a nickel's worth. In this way I have earned enough money to buy my clothes and school books.—H. Fuller, Folsom, Cal."

We hope many more boys and girls will write us about their plans, either in club work or independently, for earning money. Or if you had no original plan, but have simply carried out a club or school project, just write the Editor an interesting letter telling about your experiences. The best letters will be printed, and the writer of each one of these will receive four thrift stamps. Write on one side of the paper and sign your name IN FULL, giving your address plainly. Another letter is printed elsewhere on this page. Address EDITOR, ORCHARD & FARM, EXAMINER BLDG., LOS ANGELES.

Stamps for Rachel! A Prize-Winning Letter

To Orchard and Farm:

I spent the summer on my Grandfather's ranch, and I will tell you how I made money while enjoying my vacation.

Grandmother always cans the fruit from the trees in the yard. This year she was not very well and it would have been hard work for her, so, of course, I offered to help her. She said: "Now, Rachel, I would not ask you to do hard work like that while you're here visiting us." But I insisted, so she said I should help her and that she would give me one can for every three we put up. Then she said Grandfather could help me sell the fruit and I could keep the money.

It was pretty hot work, all right, but we put up more than 100 cans of fruit of different kinds, and that meant I had 35 cans of my own. Grandfather was going to put an advertisement in the paper to sell it for me, when he stopped in his bank one day and was telling the banker, Mr. Jenson, about it. And what do you suppose? Mr. Jenson said he would take the whole bunch himself and give them to Mrs. Jenson as a present. And so I had enough money to buy several nice things I wanted, as well as a new dress and shoes for school. And I spent a dollar of it for a present for Grandmother, who had made it possible for me to have the happiest and most profitable vacation I have ever known. —Rachel Brown, Los Angeles, Cal.

AUCTION SALE

OF

Pure Bred Livestock

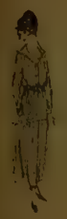
AT

SOUTHERN CALIFORNIA FAIR

Wonderful opportunity to secure better blood in Sires and Dams.

Write for Catalogue to

W. W. VAN PELT
Riverside, Calif.



THE "GRAY KITTEN" HOUSE DRESS
is chic, cozy, comfortable and of good quality. It has long sleeves, with a nice cuff, stylish roll collar of the same material and a wide hem. Elastic belt. Made of striped percale in all colors. Sizes 36 to 44, sent POSTPAID on receipt of $2.00. Extra sizes, $2.50. Your money back if you are not pleased. The "GRAY KITTEN" stands for QUALITY. Send check or money order to
THE GRAY KITTEN CO.,
1002 Lawrence Bldg.,
149 Tremont St., Boston, Mass.

NO STUMPS too big. Get the richest, most productive land into crops. Make more money. *Hercules* on 30 days' free trial. Three-year guaranty. Safe and fast. Send post card for free book. Introductory price offer now.
HERCULES MFG. CO.
1974 28th St., Centerville, Ia.

Reliable Rabbit Farm

Breeder and shipper of large Pedigreed Flemish Giants and the best of Himalayans.
3723 Moneta Ave., Los Angeles, Cal.

When answering advertisements please mention Orchard and Farm.

PLANS FOR POULTRY HOUSES. ALL STYLES. 150 ILLUSTRATIONS. SEND 10 CENTS. INLAND POULTRY JOURNAL, Dept. 33, Indianapolis, Ind.

New Bulletins

"The Dean" says: "Why not file your bulletins in your ranch office, using either transfer cases or small cardboard boxes conveniently indexed? Then whenever you are about to undertake a new project, it is but a moment's work to locate first-hand information which may be extremely valuable at that particular time."

AMONG the late publications of the United States Department of Agriculture are a number which are of interest to California farmers. Address the Division of Publications, U. S. D. A., Washington, D. C. These booklets will be sent free to anyone who applies. Order by number.

	Farmer's Bulletin
The Loco-Weed Disease	1054
Sheep on Irrigated Farms in the Northwest	1031
Alfalfa on Cornbelt Farms	1021
Commercial Comb Honey Production	1039
Dry Farming for Better Wheat Yields	1047
Baling Hay	1049
Country Hides and Skins—Curing, Skinning and Marketing	1055
Game Laws for 1919	1077

The University of California, Berkeley, also has issued some interesting new bulletins. These may be had free by writing the Director, Agricultural Experiment Station, Berkeley. Professor Condit has prepared a bulletin on "The Carob in California," of especial interest to stockmen. Ask for Bulletin No. 309. Professors Gray and Hulbirt are responsible for Bulletin 308, on Fumigation With Liquid Gas. A circular issued in August by Dr. Elwood Mead, deals with "A Plan for Reclaiming and Peopling the Arid Mesa Lands Bordering the Imperial Irrigation District."

L. A. Livestock Show

Accommodations are rapidly being completed at Exposition Park, Los Angeles, for the great Livestock Show to be held October 18-26. More than $50,000 in premiums will be offered, of which $20,000 will go for racing purses. It is believed that the coming show will do much to improve the livestock of the South and to make it rank with the horticultural and agricultural products of that section. J. R. Thomas is manager, with headquarters in the Chamber of Commerce Building. Entries are already in from five "foreign" States, as well as a score of nearby points. Everything points to the most successful kind of a show.

Riverside Fair

Plans are completed for the most comprehensive fair ever held at Riverside; the Southern California Fair will take place in that city October 1 to 11.

This exhibition will bring prominently before the visitors the fact that pure-bred livestock is rapidly coming into the Southland, as there will be many entries from herds and flocks recently reinforced by heavy purchases in the East. A feature of the fair will be the Goat Show, which promises to eclipse in number of exhibits any previously held.

"Doctoring the Tractor"

Owing to press of business in connection with the tractor show, W. W. Rainey's article is omitted this month. The valuable series, "Doctoring the Sick Tractor," will be resumed in our November issue. Have you been reading these articles? Any man who operates a gasoline engine cannot fail to secure help from them. The writer is an engineer of wide practical experience and, in addition to his knowledge, has the ability (so rarely found among mechanical geniuses) to impart his knowledge of "trouble shooting" to others.. Watch for "Doctor" Rainey's article in November.

We Feel That
Frank Oil Co.
Is in a Class by Itself

This Texas Oil Company is capitalized at only $150,000. There can be no such thing as paying dividends on "watered stock" in the case of this company, as is easily possible in a company capitalized at many millions of dollars.

Our stock covers holdings in four different oil fields

One average well of, say, 500 barrels a day brought in on any one of our holdings would produce two or three times as much in annual profits as our entire capitalization. At the present market of $2.10 per barrel, after paying royalties, such a 500-barrel well would produce a net income of $335,343. The Frank Oil Co. hopes to bring in "many wells."

Frank Oil Company Proposes to Devote One-Half Its Earnings to Dividends to Stockholders

The contract for the well now going down on the Desdemona tract, one mile north of Desdemona, calls for a completed well by October 15. The eight lots in this field are surrounded by producing wells, one of which is only 800 feet distant; another 1000 feet, and a third only a quarter of a mile distant. The five-acre tract, two miles west of Desdemona, also is surrounded by some famous producers, one of which, the Eppler, is only 300 yards distant.

The five acres in the Northwest Burk-Burnett district adjoins the famous Block 98 and the surrounding country is dotted with rigs. This holding we consider very valuable, worth far more than the total capitalization of the Frank Oil Co.

Three hundred and twenty acres—the fourth holding—is in the Cisco field of Eastland County, where a very bright future is confidently expected. Activity in many directions is going on and we believe some large events soon are to occur.

We have only the unsold portion of 25,000 shares left to offer

Shares $1.00, Non-Assessable

With the conservative business men conducting the affairs of the Company, who propose to devote one-half of the earnings of the Company to new development work, it should appear plain to everyone why we believe these Frank Oil Co. shares are in a class by themselves. Two or three hundred shares in a $150,000 oil company with such holdings have a rare opportunity, we believe, to undergo a very remarkable enhancement, once oil is brought in on any of its holdings.

The Time Is Very Short, However.

This Offer Cannot Remain Many Days.

Hurry your orders to this office, or wire them at our expense. Time is growing shorter. This block is growing smaller very rapidly.

American Securities Co.

FISCAL AGENTS

828 W. P. STORY BLDG. **LOS ANGELES**

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is mightier than pen and sword

It is the foundation of health and human energy. It produces the stamina and the strength to do things. On the field of battle—as well as on the tables where peace and plenty reign—chocolate has proved itself a 100% food.

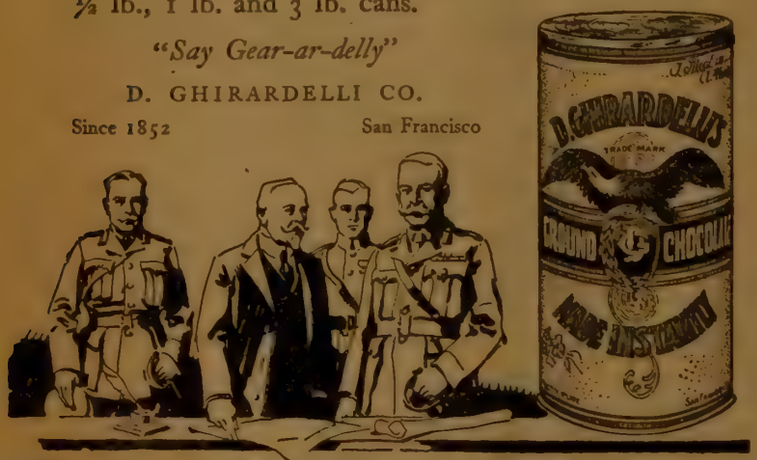
To insure supreme quality chocolate you must *insist* upon Ghirardelli's. It comes *only* in cans —*for your protection.*

At the store where you do your trading—in ½ lb., 1 lb. and 3 lb. cans.

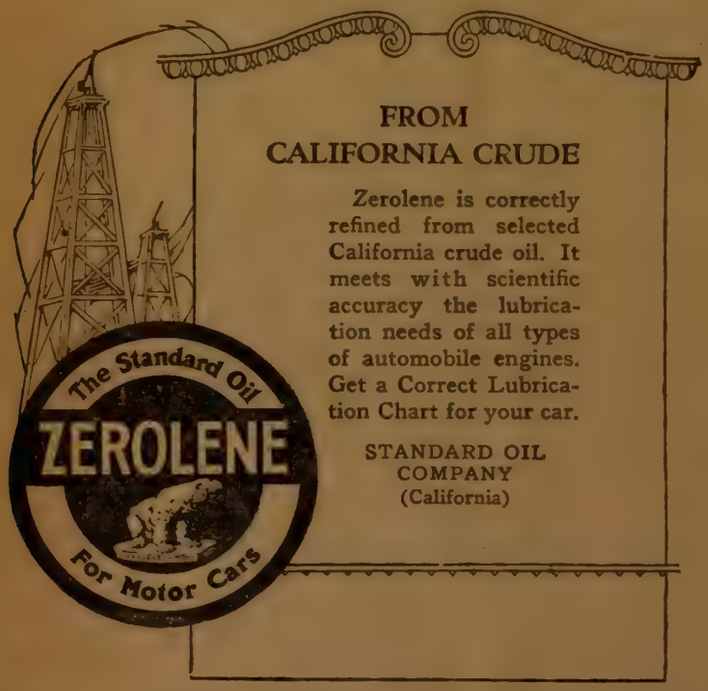
"Say Gear-ar-delly"

D. GHIRARDELLI CO.

Since 1852 San Francisco



Ghirardelli's Ground Chocolate



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CALIFORNIA CRUDE

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STANDARD OIL COMPANY
(California)

PUT THIS DOWN IN YOUR NOTE BOOK:
"Pacific new and re-newed pipe saves me money."
Renewed screw casing costs from one-half to two-thirds less than standard pipe. Large savings on standard pipe, fittings and valves; special fittings made to order. Pacific Pipe is thoroughly tested and guaranteed for 150 pounds working pressure; asphaltum dipped; serves every purpose. Let us save you money. Write!

PACIFIC PIPE CO. 228 MAIN ST. SAN FRANCISCO

Sterilizing the Fence Rows

Here is a proposal that should interest every farmer who has a fence. And no farmer, surely, can take offence at the intimation that he is harboring weed and insect-pests, for we all know it to be true that the fence-row is the source of many evils. Mr. Reynolds puts forth a very practical solution of a vexing problem.

By Bronte A. Reynolds

OF ALL the problems which have vexed the agriculturist and fruit grower, probably none occupies so unique a place as that of caring for the narrow strip of uncultivated land with the fence running down the center, commonly called the fencerow. It is at once a benign, friendly agent, but also one which shelters and fosters two deadly and insidious pests—weeds and insect life.

Apparently the problem is one that has never engaged the serious attention of agriculturists, for it is difficult to find, in agricultural literature, any suggestions for remedial measures. Yet I am impressed with the thought that there is an adequate remedy and that when fully developed it will be accepted and appreciated by the farmer and fruit-grower alike.

The Fencerow a Menace

The average fence does not permit of cultivation within a given distance on either side. In the area thus protected by the fence, thrive noxious weeds and grasses which, unmolested, develop seed to be sown by wind and other agencies from season to season. Upon these weeds, when they are in a green, succulent stage, a large number of our destructive insect pests feed, reproduce and hibernate, and from these locations as foci are dispersed into the adjacent cultivated crops to wreak their toll of damage, with which we are already too well acquainted.

Clean Fence Rows

Indicate both thrift and prosperity—the former, because they demonstrate the owner's pride in his farm; the latter, because they mean better fences, less weeds, fewer insect pests and consequently bigger crops.

I can produce a large number of works on destructive insects, many with illustrations of fencerows, and show under the headings "Control Measures" and "Repression," the admonition that adventitious growths, such as weeds, grasses, etc., protected by fences, be cut, burned or otherwise destroyed in order that insects and weeds which ordinarily would be destroyed by cultivation shall find no hibernating refuge along the fence line.

However, the nearest approach to a method of "doing away with this untilled area" was the novel but impractical suggestion of using a movable fence. A certain theorist recommended moving the movable fence, plowing or cultivating, and then putting the fence back in position.

But a fence has many functions. It keeps your stock in; it keeps your neighbors' stock out; it protects your orchard, your farm and your vineyard; and most important of oll, usually, it establishes the legal boundaries of a given estate; and for this last reason, as old and sound as "Magna Charta," the movable fence is impractical, for it would entail vexing difficulties.

Why Waste Efforts?

But why attempt to till this small strip of land? What of value, other than a few berry bushes, ever occupies the uncultivated area protected by the fence? Nothing of commercial importance! We agree that the fence is essential; yet it involves a certain amount of waste land. Thus we are confronted with the paradox wherein we build a fence to protect our crops and by so doing perpetuate broods of insects and noxious weeds, which cost more in wasted energy and actual losses than many other sources combined. Then why not sterilize this unproductive land?

Now, after many years of recurrent losses, we can settle this fence problem for all time by chemically sterilizing this strip of three or four feet, in which nothing of value is produced, and in so doing can wipe out both weeds and insect plagues!

A Word About Chemicals

Crude oil, salt and other weed-killing preparations have disadvantages which preclude their wide use as sterilizing agents, since only partial success has followed their application, and at this time no more promising agent is available than some of the many types of arsenical poisons. After a given time no danger of stock poisoning would be entailed, since nothing would grow in the poisoned fencerow area upon which stock would be tempted to feed.

In a comprehensive treatise, Dr. George P. Gray, the chemist of Berkeley, who has for years devoted his time and talent to investigation of weed problems and the chemistry of weed-killers, says:

"While arsenic apparently has failed actually to eradicate the wild morning-glory, even when used at the rate of one pound to the square yard, it still may be used as an efficient soil sterilizer in respect to a great variety of weeds. All of the Centerville plots to which an ounce or more per square yard of arsenic trioxide had been applied were barren of all vegetation, except morning-glory, for 14 months, notwithstanding the leaching by rains of two winters."

Cost of Materials

The minimum cost of materials for this purpose is less than 1 cent per square yard or about $40 per acre, at pre-war prices. This would not be prohibitive for the prevention of weed growth on graveled walks, tennis courts, roadways, or fencerows where sterilization is desired. In soil sterilization experiments, the use of amounts of arsenic in excess of one ounce per square yard appear to have been a waste of material. Future observations may show, however, that larger amounts have a more lasting effect.

The cost of materials to treat a strip of soil along a fence row one yard wide and 100 yards long, at present prices, would be about $2, or $35 to sterilize a 30 inch strip around a 40-acre field.

Preparing the Spray

STOCK SOLUTION (GRAY'S FORMULA)

Granulated Caustic Soda (98 per cent) .....10 pounds
White arsenic (arsenic trioxide,

99 per cent) .....20 pounds
Water (to make) ..... 5 gallons

Dissolve caustic soda in about two gallons of water, in wooden or metal vessel (preferably iron), and while still hot, add the dry arsenic, about a pound at a time, at a sufficient rate to keep the solution near the boiling point without its actually boiling.

Stir continuously while adding the arsenic and until all is dissolved. Considerable heat will be evolved in dissolving the caustic soda and through the union of the caustic soda and arsenic. After all the arsenic is dissolved, let the solution cool and add sufficient water to make five gallons.

CAUTION: Do not add cold water to the hot solution. An explosion may result, as the solution is hotter than the boiling point of water.

How to Use Poison

For each square yard to be treated mix two fluid ounces of stock solution with one gallon of water; or for every 100 square yards, mix one and one-half gallons of the stock solution with 100 gallons of water. Apply with ordinary watering pot, using one gallon of solution to each square yard. For treatment of larger areas, a barrel or tank may be mounted on a sledge.

IMPORTANT: Each square yard should receive an amount of solution containing at least the equivalent of one ounce of arsenic trioxide.

Remove all living or dead weeds as completely as possible before applying poison.

Danger to Live Stock

Arsenic trioxide is a powerful poison and when using it as a weed killer one should remember that it is equally poisonous to animal life. Remove all vegetation before spraying and livestock will not be tempted to graze in the poisoned area.

Can Morning Glory Be Killed by Spraying?

Is the Villain Illustrated At the Left One of Your Arch Enemies? This Article Tells What Is Known About Means of Exterminating This Pernicious Pest.

FURTHER experiments by Prof. George P. Gray of the university have strengthened his conviction, expressed last fall, that the use of arsenical sprays for morning glory control is effective only under rather restricted conditions. So far little success has attended experiments conducted in semi-arid sections.

The spray may be used with good success, however, in the fog belt, if applied when the morning glory vines are dormant. October is considered the best month to spray with arsenical solution. The spray may be applied in November, or possibly later, if the vines have not been killed by frost. Anyone intending to spray in these months should allow the plants to grow undisturbed after August, as the vines must be at least three months old before the spray will affect the roots. Damp, cloudy, foggy weather is favorable to destruction of the roots.

How It Is Done

A stock solution should be made from the following ingredients:

Granulated caustic soda (98 per cent) ..... 10 pounds
White arsenic (arsenic trioxide, 99 per cent) ..... 20 pounds
Water, to make ..... 5 gallons

Dissolve the caustic soda in about two gallons of water in a metal or wooden vessel (preferably iron) and while still hot add the dry arsenic, a pound at a time, at a sufficient rate so that the solution is just at the point of boiling but does not actually boil. Stir continuously until all is dissolved. Considerable heat is produced by dissolving the caustic soda. Additional heat is produced in the chemical reaction which takes place. After all arsenic is dissolved, let the solution cool and add water to make exactly five gallons. Do not add cold water to the hot solution; an explosion may result. If the arsenic fails to dissolve, the mixture may be warmed.

This stock solution is used for making the spray, which is made up by diluting at the rate of one gallon of stock solution to 100 gallons of water. For small or experimental amounts the solution may be made up by using one-fourth pint of the stock solution to three gallons of water.

(Continued on Page 46)

The CHEMIST says=
"genuine GIANT is always uniform"

At every Giant Powder plant the chemical laboratory controls the processes of manufacture. They make continuous tests that insure the unvarying high quality of Giant Powders. Each pound of Giant Powder is exactly like every other pound of the same grade. Such uniformity means economy, efficiency, safety. Professional users of Giant Powders—miners, quarrymen, contractors—all know that the name "Giant" stands for utmost dependability in explosives.

When you have land to clear, trees to plant, subsoil to be broken or ditches to be blasted, tell your dealer to get for you one of the Giant Farm Powders—Eureka Stumping or Giant Stumping. Don't accept any ordinary dynamite, but insist on genuine Giant Powder, bearing the Giant trade mark on every box.

A postal will bring you our book, "Better Farming with Giant Farm Powders." Its 52 pages are full of short-cuts and labor-saving methods.

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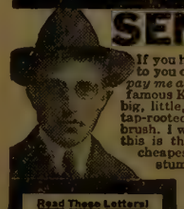

If you have useless stump land, I want to PROVE to you on your own stumps—*30 days before you pay me a penny*—that ONE MAN with my famous Kirstin Stump Puller can pull big, little, green, rotten, low-cut, tap-rooted stumps, hedges, trees or brush. I want to convince you that this is the easiest, quickest and cheapest way to pull stumps.

One Man Alone Handles Biggest Stumps!
Thousands of Kirstins now in use!

Read These Letters!
I pulled one pine stump 3 ft. across top. My One-Man Kirstin pulls bigger stumps than I ever expected.
Mr. J. Erkkila, Calumet, Mich.

My Kirstin pulls stumps up to 2 ft. blind maple 8 to 16 inches. Pulled tree 100 ft. high and 22 inches at base, in 15 minutes.
A. B. Jaffery, Gobie, Oregon.

My Kirstin pulled stumps we thought it could not pull.
Mr. E. A. Buckley, Bay Springs, Miss.

Quick Shipment From
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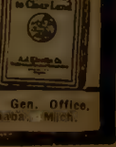
After 30 days trial—if satisfied, keep puller. If not pleased, send it back at my expense. *You don't risk a penny.* Four easy ways to pay.

Kirstin One-Man Stump Puller Single, Double, Triple Power!

Weighs less—costs less—yet has greater *speed, strength, power* and *lasts longer!* Clears one acre from one anchor! Easily moved around field. A few *pounds* pull or push on handle exerts *tons* on stump—due to wonderful leverage principle. 3-year guarantee against breakage!

Get My Big New Book NOW!
Tells how one man pulls stubborn stumps in few minutes at low cost. Explains all about different speeds. Also patented quick "take up" for slack cable. Describes Kirstin one man Clutch Model; Kirstin One Man Drum Model; and Kirstin Horse Power Model. Get the book and Special Agents' Offer. Shipment from nearest distributing point saves time and freight. Write today.



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COUNTRY PROPERTY—For Sale

FOR SALE—Carlsbad Paying Country Homes By the sea. From four acres planted in the fall a $1580 crop of winter peas was picked and the land then made ready for summer crops, which may pay well, too. So do other vegetables, berries and figs at Carlsbad on Ocean Highway and railroad, between Los Angeles and San Diego. Frostless, irrigated, finest climate and soil conditions in the State.
F. H. TOLLE,
Broadway 5395. 712 Garland Bldg.
740 South Broadway, Los Angeles.

FRUIT and grain ranch for sale, 31 acres. 1548 fruit trees, mostly Bartlett pears. Pear crop sold this year for $1400.00. Price $9000, half down. Fruit on this ranch will pay for ranch in a few years. Also stock ranch 5½ miles from Eugene, Oregon. Price $5000. R. M., Box 412, Lakeport, Lake County, Cal.

GOVERNMENT LANDS

300,000,000 ACRES OF FREE LAND IN U. S.—The Homeseeker, a 104-page book, with maps and illustrations, showing millions of acres of public homesteads, timber, mines and grazing lands; founded on historical facts, does NOT MISLEAD; read official warnings; eliminates crooked land agents; tells whereabouts of government land in Arizona, New Mexico, Nevada, California, Idaho, Oregon, Montana, Utah, Washington and Old Mexico. Describes water, soil and climatic conditions. All principal U. S. land laws. A marvelous publication. Just off the press. Mailed anywhere, $2. Address THE HOMESEEKER, Dept. 5, Third Floor, Grant Building, Los Angeles, Cal.

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I WANT responsible and experienced fruit, alfalfa or grain irrigation farmers to work on crop share basis. Land is river bottom tule land, plenty of water, good living conditions and good markets. Will enter into one or two years' contract with right man and might extend same into option of purchase. Party should have some implements, livestock, or money with which to buy them. Please state age, farming experience, from whom you have rented, amount of livestock and implements you own, financial condition, and size and age of family. State when your services will be available, and amount of land you can handle. Address Herman Janss, San Joaquin, California.

San Joaquin Valley

LANDS WILL PRODUCE TWO CROPS EACH YEAR, PLENTY WATER, GOOD ROADS, GOOD SCHOOLS. TEN YEARS' TIME TO PAY. ONLY 6 PER CENT INTEREST.
AUTOMOBILE TRIP ONCE A WEEK.
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WRITE FOR our free circular on cost of turning raw land into producing alfalfa fields. Good land in No. L. A. County in the water belt, $55 an acre; one-tenth down. R. & L. Ranch, Fay Bldg., Los Angeles, Cal.

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$8000 MOUNTAIN STOCK RANCH with stock. Trade bay property or sell. G. R. Hill, Willits, Cal.

WE EXCHANGE Real Estate—Johnson & Temple, San Jose, Cal.

REAL ESTATE

SONOMA, MENDOCINO AND HUMBOLDT COUNTIES.
We have big and little stock, dairy, poultry, fruit and berry farms; we give correct information as to best location where to settle in California. JESSE I. JEWELL, Santa Rosa, Cal. 428 Fourth St.

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COME SEE 75 ACRES of land that has an abundance of water to irrigate 100 acres. At sight of me you will know why I sell. No trade. W. B. Brooks, Bonny Doon, Cal.

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40 ACRES WALNUTS AND FRUIT
Excellent soil, plenty cheap water, adjoining good growing town San Fernando Valley; 20 acres walnuts, 10 acres apricots, 10 acres pears, land alone worth $600 per acre. Price, including buildings, only $24,000; easy terms.
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Have some very choice apple orchards for sale in best condition. Eight and ten-year trees, of the best varieties (Winesap, King Laird, Rome Beauty). Address Clara Johns, Yucaipa, Cal.

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SMALL ranch wanted. Will some reader of Orchard and Farm kindly advise me where I can buy from ten to twenty acres of good land at reasonable price and terms. Near small town with good future; soil and conditions favorable for English walnuts, fruit, etc. Want above land for a home. Musical Director, P. O. Box 733, Oakland, Calif.

WANTED to hear from owner good farm for sale. State cash price, description. D. F. Bush, 40A, Minneapolis, Minn.

WANTED—To hear from owner of farm or unimproved land for sale. O. K. HAWLEY, Baldwin, Wisconsin.

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For a small fee I will relieve your mind of worry over care of your fruit trees; city lot or big orchard; lay out, plant, develop, treat, prune, spray, advise. Thirty years' practical experience; scientific, up-to-date methods; results guaranteed; references. INVESTIGATE!
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TREES, TREES — Placentia and Eureka walnuts on black. A general line of high grade nursery stock. A. K. Marsteller Nurseries, 1142 Ross St., Santa Ana, Cal.

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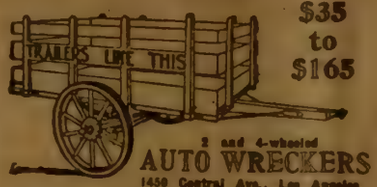

FARM TRACTORS, MACHINERY

OWING TO OUR EXPORT business we expect to place our small 12 h. p. tractor on the market about August 15. Tractor is made with 36-inch front wheels and is low enough to go under trees; it is arranged for discs, cultivator shovels, mowing attachment and can be operated by one man; it is suitable for all kinds of gardening and cultivating and handles two 8-inch plows. Price of this tractor is $475.00 at factory. Write for further data. U. S. Iron Works, Seattle, Wash.

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EVERYTHING SECOND HAND—All kinds stoves, plumbing supplies, pipe, farm tools a specialty. Noah's Ark, 609 E. 1st St. Phone 19750.

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WE NEED A LIVE BOY OR GIRL in every territory to look after our renewal subscriptions; big wages can be made at this spare time work. Full details will be mailed upon application. Address Orchard and Farm, Examiner Building, Los Angeles, Cal.

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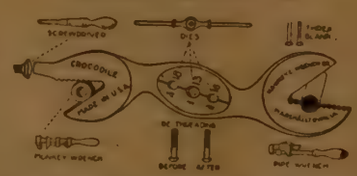
Six Handy Farm Tools in One.



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This valuable wrench sent postpaid to any address free with a twelve months' subscription to Orchard and Farm at 50c.

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Will keep your ditch clean and produce lamb-skins known as Astrakhan fur—also the best mutton.

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PERSIAN SHEEP

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"SAPPHIRE" SWINE (BLUE HOGS) actually blue in color. The Blue Hogs are no longer an experiment. We have bred them successfully for twelve years before offering any for sale. They mature quickly, grow very large and the females are the most prolific breeders on earth. Write for information. Mention this paper. The Blue Hog Breeding Co., Wilmington, Mass.

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BILLIKEN TYPE of Chester Whites. This herd was the real BIG winner at the State Fair. 15 spring boars sired by the Grand Champion and out of sows sired by Billiken. Every one a herd leader and priced to sell to farmers. A few spring gilts of the same breeding. Three tested Billiken sows due to farrow in October. Two gilts bred for October farrow. Write for my special catalogue and price list. C. B. Cunningham, Mills, Cal.

LIVESTOCK—Poland Chinas

REG. BIG TYPE POLAND CHINAS—Am offering a few good boars ready for light service at reasonable prices; also booking orders for boar pigs of this spring's farrow for June delivery. J. H. Cook, Paradise, Calif.

LIVESTOCK—Berkshires

FOR REAL GOOD BERKSHIRES write Frank B. Anderson, Box 734, Sacramento, California.

LIVESTOCK—Duroc Jerseys

ORION MODEL
Sired by
ORION CHERRY KING, JR.,
the $3500 Boar.
Is Making His Mark As a Great Breeder.
He heads our herd of up-to-date Durocs. The most popular blood lines are represented in his pedigree—the kind that have laid the foundation for many prize winning herds.
Choice Spring Boars for sale. If you are in the market for some outstanding boars we have them.
F. D. BERRY CO. OAKLAND, CALIF.

REGISTERED Duroc Jerseys—choice yearlings, either sex. Breeding and satisfaction guaranteed. H. E. Boudier, Napa.

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Best recleaned seed sent direct. Please state amount wanted when writing.

LEO TURNER
Yuma, Ariz.

FIELD SEEDS, GARDEN STOCK

HARDY Hybrid Alfalfa. Wonderful Grower. Getting thicker and better with age. Permanent. Quality unexcelled. Write for proof. J. L. Lawson, San Jose, Calif.

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FARMERS CLASSIFIED MARKET PLACE

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In my opinion Orchard and Farm is the best publication on the Pacific Coast. No ranch is complete without your wonderful journal.—Fred W. Wallraff, Route A, Box 125, Placerville, Cal.

Best on the Coast

I consider your paper one of the very best farm papers I know of—certainly the best on the Coast.—W. A. Lee, Covina, Cal.

In Touch With the Big Things

What I like about your paper is that it is in touch with the big things being done by the big people. It is not filled up with a lot of swivel-chair stuff by men nobody knows about. If these big men think your paper is worth writing for, it is worth reading. I hope it will keep up its standard, at least for the next six years that I have subscribed for.—J. Oscar Know, Davis, Cal.

They Read It Closely

Within the last few days I have received letters from men saying that they saw an article in Orchard and Farm about the Western Walnut Association. I wish to thank you for the notice and also let you know that your readers must read the paper very closely. Today I had a letter from a man in Seattle, yesterday one from Lodi, and a few days ago one from a man in Utah, so evidently you have a wide circulation.—H. V. Meade, Orenco, Ore.

A Great Help to Them

Your paper is a great help to us. We farmers need all the help we can get in these times. Your premium book, "Practical Farming," is fine. I would not be without it.—J. B. Osborn, Flournoy, Cal.

Advertising Results

Please discontinue my ad in your directory as I am completely sold out. Will notify you when I have any more stock for sale, as you certainly obtain results. Upon receipt of bill to date will mail check to cover amount. Late sales as follows: Six gilts to H. H. North, Winters; six yearlings to H. H. North, Winters; four yearlings to C. C. Lewis, Foss Valley, Napa. H. E. Baudler, Big Ranch Road, Napa, Cal.

Editor to Editor

Editor: I think I need you on my exchange list. I am this week sending you the Press, and will continue to do so—co-operation is the thing. I have seen several copies recently of Orchard and Farm, and must confess it is all and more than you say. More real pep than any other paper of its kind that comes to my desk. Keep up the good work and the covers will grow farther apart every month.—Arthur G. Munn, The Valley Press, San Fernando, Cal.

Helps Local Farmer

I began my subscription at the newsstands some years ago, and hold your journal in high esteem as a valuable helper to the farmers struggling to better existing conditions, and being a Western product, it deals with Western matters in a purely rational, matter of fact way, readily understood by the Western farmer. I have never failed to recommend it to my friends as a valuable farm magazine.—Wm. H. Hamilton, Box 204, San Luis Obispo, Cal.

Hits the Nail on the Head

Have just read your March number. It is very interesting. In your economic articles you hit the nail square on the head. More power to you. Also more and more of your good, honest articles that raise confidence in old California, the real queen of our nation. —E. M. B., Irwin, Cal.

Want to Shake Hands

All we can say after reading Orchard and Farm is—good for you. Wish we could reach across the miles and shake hands with you. So many editors give no sign but that they are living in the stone hatchet age, that we are glad you are living and writing today.—Mr. and Mrs. William Hughes, Hillsboro, Ore.

Fresh and Strong

I congratulate Orchard and Farm on its stand on economic problems. I get a good deal from it that is fresh and strong.—Elmore Chase, Horticultural Inspector, Fair Oaks, Cal.

The Farmer's Friend

I like Orchard and Farm. It suits me the best of any farm journal I know. It is the farmer's friend.—Henry Murphy, Milo, Cal.

From a Grange Leader

I think the March number of Orchard and Farm the best ever, and I am glad to hear of its increasing circulation. It should be in every rural home.—K. D. Hill, California State Grange Lecturer, Eldridge, Cal.

POULTRY

Our Baby Chicks Lead

WHY?

Because they are properly hatched and handled and we can supply chicks

EVERY DAY

—We guarantee a full count of live chicks at destination on lots of 25 or more.
—Poultry—all breeds. Send for Price List.
—EVERYTHING IN HAIR, FUR AND FEATHERS.

FANCIERS' EXCHANGE,
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FALL BABY CHICKS FOR SALE—400,000 S. C. White Leghorn baby chicks, from heaviest laying (Hoganized) stock. Price during August: 25, $4.00; 50, $8.00; 100, $14. Price during September: 25, $4.50; 50, $8.50; 100, $15. Special prices 500 and 1000 lots. Safe delivery guaranteed; you pay only for chicks received alive and in good condition; no money in advance; pay on delivery. Shipped safely anywhere west of Rockies. Finest hatchery in world. Established 1898. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

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SEVENTY-FIVE CENTS will pay for one year's subscription, new or renewal, to The California Poultry Journal and Orchard and Farm. If you are a subscriber to either paper your time will be extended. Mail your order direct to Orchard and Farm, Los Angeles.

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POULTRY WANTED—All kinds. Highest prices paid. We accept shipments. We make a specialty of finest breed of pullets and laying hens. Culver City Poultry Yards, Culver City, Calif.

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WARDS' Real Red Rhode Island Reds. In competition with Eastern stock won at the State Fair as follows: 2nd cock, 1st and 3rd hens, 1st and 3rd cockerels, 1st and 3rd pullets, special for best colored female. Cockerels, pens, trios, hatching eggs from carefully mated pens. Write for circular. Wards' Poultry Farm, 39-B South Lincoln Ave., San Jose, Calif.

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MRS. C. A. RICHEY has enlarged her rabbitry and will breed Himalayans, American Blues, English and the famous "Richey Reds." Address R. 7, Box 854, Los Angeles. "Richey's Western Rabbit Book," 60c.

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PEDIGREED New Zealands, good, healthy, thoroughbred stock. Reasonable prices. Miller & Jenkins, 915 Lincoln ave., Pasadena, Cal. Write for prices.

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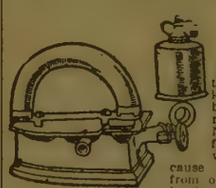

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FOR RENT—Apartments, furnished. Adults, $30. Adults and dog, $40. Adults and boy and dog, $75.

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PERSONAL—Marie, have just learned of your inheritance from your rich uncle. All is forgiven. Please return.—Joe.

FOR SALE—If you want something with a "kick," try my mulefoot bacon.—George Brown, Butcher.

FOR EXCHANGE—One deaf mule, blind in one eye and otherwise in good condition (except for sweeney). What have you?

The "Green" Hand

His Nibs: "The foreman sent me up, Sir, for a yard and a half of humus."

The Boss: "That so, Sonny? Well, you run back and tell him we're almost out of humus, and ask him if he couldn't use a few feet of draw-bar pull instead."

Answer Department

Replying to Ima Pennygrabber: We do not believe anything would be gained by substituting sawdust for the ground excelsior you are now feeding your hogs. No doubt their unthrifty condition is due to chronic tightness of the pocketbook. Allow us to express our sympathy for the hogs.

No, indeed, Patricia, we would not advise that you use hair tonic on your maidenhair ferns. It seems a shame to waste any "43 per cent" liquid these days. For best results with the ferns, shampoo them carefully every ten days and after rinsing, apply coconut-oil, rubbing it thoroughly into the roots. Their survival of this treatment will prove to you that you have a very hardy variety.

Fanny Farmerette writes to know how long the khaki coat of the Land Army costume should be worn. We should say it depended on the kind of work you are doing, Fanny. Not more than three weeks at the longest.

Logical!

"Wouldn't it save you a lot of work if you placed your wood shed nearer the kitchen?" inquired the minister on the occasion of a visit to Ben Gonnadooit's place.

"Kain't see how it would," Parson," replied Ben, "seein' as my wife totes all th' (p'tu) fuel."

His Philosophy

"IT SURE do beat all," drawled Ben Gonnadoit one cool October morning, "how some folks'll alus find somethin' t' kick about. As fer me, I take things as they come and aim t' be contented with my lot. Now, fer instance, this mornin' I suppose Jud Peters is a-yellin' his head off because his calves broke through our line fence an' he had t' get out before daylight t' run 'em back. I don't see why any feller wants t' keep stock when th' fences is so bad. I got rid of all of our'n long ago. Even had t' sell the' pigs on th' lowest market of th' year, you remember, but I got tired o' roundin' 'em up f'm all over th' countryside.

"Now I suppose Jud'll be after me ag'in t' work on that there fence. As if I ain't propped up every post thet was broke off! I reckon he thinks I ain't got nothin' else t' do but fix fences." And Ben lowered his slippered feet from the stove-rail, where he had been resting them, opened the door of the heater, and stirred the coals with the poker.

"Seems like you plumb got out o' the knack o' buildin' fires since last winter, Wife," he complained. "This here one ain't drawin' no good at all! Yes, I suppose you'll blame it on th' flue that needs cleanin', but ain't I been tellin' yu that I didn't get no time t' work on it durin' the summer and now th' chimney's too hot t' work on in th' mornings and that's about th' only chanct I would get t' do anything with it, seein' as how I'm so busy th' rest of th' day.

"Well, th' sun is shinin' now. Guess I'll get started fixin' them culverts so's when it starts rainin' we won't have the roads flooded the way they've been th' last four years. I could finish that job in a week ef th' mornin's wa'nt so foggy, but I don't believe in takin' chances on catchin' cold these fall mornin's. Y'u know I allus bin sensitive t' changes. And, anyway, what if I don't get them culverts ALL fixed! It might not rain so much this winter, an' it's better t' take a chance on a little onconvenience then t' risk losin' my health now, ain't it?"

The Millionaire's Wish

I wish that I were poor and free
Riding in a flivver.
I'd get more exercise, you see,
And cure my lazy liver.

—*Justin Nutt.*

"The pen is indeed mightier than the sword," said the soldier, holding his nose as he approached the hog-lot.

Aeronautically Speaking—"A Tail-Spin."

Don't Get Stung!

WAR conditions, with the high price of sweets, influenced many novices to take up bee keeping. Many of these persons were doomed to disappointment because of insufficient knowledge of "the game."

Bee keeping is a business requiring knowledge of many things. No one should go into it without special training in both theory and practice. No one should keep bees who cannot give them time and attention, or who does not know how to recognize and control the common bee diseases. The neglected bee yard is not only unprofitable to its owner, it is also a menace to all other bee yards in the neighborhood.

Since pasturage for the bees is the first requisite for their successful maintenance, the prospective bee keeper should first consider whether the territory over which the bees would roam in search of nectar is already fully occupied.

Bees Need Care

Owning bees that look after themselves and keeping bees according to modern methods are widely different practices.

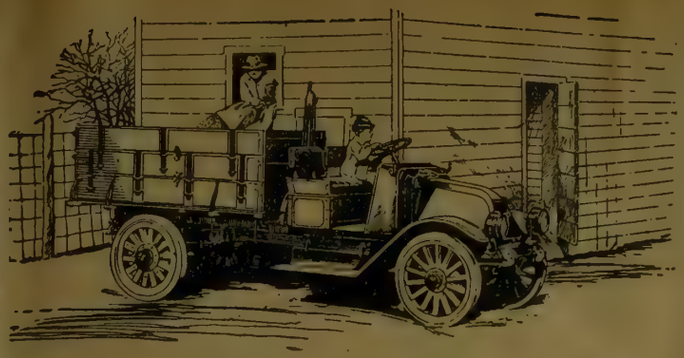
Old, wasteful practices still exist in some parts of the country; in former days it was customary to place bees in some out-of-the-way corner, and there let them remain, forgotten, until autumn. The bee keeper would then apply brimstone to the strongest colonies, and, after wholesale destruction of the bees, would be able to scoop out a dozen or more pounds of questionable honey if the season had been favorable.

Bee keepers of today say that such a practice is as much to be deplored as would be the inconceivable performance of smothering poultry in order to get the eggs they had laid.

While probably no Orchard and Farm reader would be guilty of such archaic methods, it is earnestly advised that for his own protection anyone who is interested in raising bees investigate the methods of successful apiarists, read good books on the subject, and take the free University of California correspondence course on Bee Keeping, which may be had by addressing the Division of Agricultural Education, Berkeley, and asking for Course 15. Such preparation may prevent serious financial loss.

Save Every Copy

OF Orchard and Farm. At the end of the year we shall publish a complete index of all the numbers for 1919. You can then bind the volume for ready reference, and quickly find information upon any desired subject. Many of our readers find it easier to save each copy than to clip out special articles; frequently, moreover, the subscriber will destroy one valuable article in cutting out another. This new plan, therefore, should make Orchard and Farm even more useful to its big host of friends. But in order to secure the benefits of the complete index for the year, you must preserve your copy of each issue. And don't let your subscription expire.



28,000,000 Pounds 100,000 Miles 3 Years!

THREE years ago Fred Weaver, who lives at Creston, Iowa, bought a Model "F" 1-ton **International Motor Truck.** Mr. Weaver, like other men who have a large volume of heavy hauling—in fact, "hauling" is his particular business—was in some doubt as to advisability of buying a motor truck. But—read what he says today:

"I have hauled about 4,680 tons (9,360,000 pounds) per year and have averaged about 100 miles per day. I have done all kinds of heavy hauling, both short and long hauls, **over the worst kind of country roads.** After using my truck at this heavy work for three years, I am satisfied that the **International** is the best truck that I have ever seen when it comes to doing hard work year after year. I have had good service from the truck and the Harvester Company and am well pleased."

Mr. Weaver states further that he has covered between 90,000 and 100,000 miles with his truck during the three years he has had it and has hauled approximately 28,000,000 pounds. How many years would it take you to haul 14,000 tons of farm produce and travel 100,000 miles—almost four times around the globe—with your team and wagon?

Whether you have a short or long haul, an **International Motor Truck** will save you much valuable time. Write for descriptive literature.

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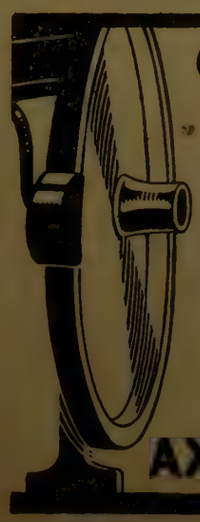

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Mica Axle Grease spreads evenly, forms a cool, slippery coating that clings to the spindle and makes pulling easier. The mica fills up all roughness in the metal, makes the grease work better and last twice as long. No hot boxes. Ask your dealer. Buy by the pail.
STANDARD OIL COMPANY (California)
MICA AXLE GREASE

Getting the Goods on Biddy

(Continued from Page 5)

vided into four sections, each of which accommodates 100 hens. This building is of the most approved construction and cost nearly $500. Six more sections are to be added, making a 1000-hen house, and another one of similar size will be built as soon as needed. Trap-nests are arranged underneath the front edge of the dropping board and inspected five to eight times each day, a record being made of the band number of each hen which has laid an egg before she is released. The daily egg sheet is transferred to the monthly egg record, which shows each hen's performance for the month. The value of her output is found by multiplying the number of eggs by the average market price for the month.

Rations Used at Ill-a-Hee

All layers are fed early in the morning the following mash, made crumbly with buttermilk: Chopped oats, four parts; bran, four parts, shorts, two parts; alfalfa meal, two parts; beef scrap, one part. The same mixture, dry, is kept in hoppers before the hens at all times. About 10 o'clock five pounds of wheat and oats are fed to each hundred hens and an hour before roosting time 12 to 15 pounds more. The grain is scattered over the floor, which is kept covered with straw. Plenty of green feed in the shape of mangels and kale complete the ration, which is varied somewhat to suit the season and price of feedstuffs.

In the spring all pullets which have not laid 100 eggs or more are culled out and sold for meat. The balance are turned onto free range, as soon as the forage crops are sufficiently grown. In the autumn, when the pullets have been laying for 12 months, all which have 150 eggs or more to their credit are retained for breeders, the balance being marketed. Hens whose eggs, upon being incubated, show weakness in fertility are discarded as breeders, no matter what their egg record may be. Only cockerels whose dams have laid 175 eggs or more during their pullet year are saved and only those whose dams have records of 200 or more are used, due regard being paid also to blood lines and to size and vigor of the individual specimen. No attention is paid to fancy or exhibition points. Breeders have individual cards showing egg record and ancestry for three generations, date hatched and date of first lay, number of eggs incubated, if any, per cent fertile, and number hatched.

Interest and Enthusiasm

An accurate account is kept of feed, labor and other expenses and of the receipts from the sale of eggs and breeding and market stock. These items are figured in every possible way, showing the exact cost and profit of every branch of business. While the Ill-a-hee poultry farm is as yet of modest proportions, enough has been accomplished to prove the value of careful, conservative, accurate, systematic and scientific methods. Eggs and broilers sell at premium prices on the local market and the demand for breeding stock far exceeds the supply.

Plans are being made to co-operate with the Oregon Agricultural College in conducting various experiments in poultry husbandry. A graduate of the poultry department of this institution is the chief assistant of Mr. Upson, who declares he is in the chicken business because he likes it and thinks it is not good for a man to be cooped up in an office all his life, like a setting hen on a nest. During the past two years a good share of Mr. Upson's time has been spent in lecturing for the Government on poultry production, for the purpose of stimulating and improving this important branch of agriculture. After October 1 his entire time will be devoted to practicing what he has been preaching.

Impossibilities

It is impossible to raise lice and chickens and make money. It is impossible to make money by raising weaklings. It is impossible to make money on fertile eggs during the hot spell if shipped to the market. It is impossible to make money on your eggs in the summer and then buy them back in the winter at an increased cost of 25 per cent. "Preserve eggs!" It is impossible to make money on poultry unless you cull old and young vigorously. It is impossible to make money if a lot of useless males are kept on hand.

Interior of Laying House at Ill-a-Hee Ranch

These four-month-old pullets are laying. The "slackers," if any, will soon be weeded out. The arrangement of the trap nests may be seen at the right. Note the elevated feed-hoppers. This illustration shows how well-lighted is the laying house. Efficiency is the watchword at Ill-a-Hee.

Pointers on Feeding the Farm Flock

How often shall I feed my flock? What effect will it have upon them if I am unable to feed them regularly? Can I keep chickens if I am only able to look after them once a day? These are common and perplexing questions. They are answered clearly by a poultry expert as follows:

Some poultrymen feed their flocks twice a day, while others feed them three times a day. The best plan is to feed fowls in confinement three times a day and those having free range in summer twice a day.

Idle fowls often contract bad habits, such as feather pulling and egg eating, besides going out of condition from lack of exercise. It is better, therefore, to keep them busy.

In case it is not convenient to feed three times a day the moistened mash may be fed in the morning, and at the same time the noon feed of grain may be scattered in the litter. This will keep the fowls busy a great part of the day.

For those who can not conveniently feed their fowls early in the morning a good plan is to scatter grain plentifully in the litter after the birds have gone to roost. This grain will furnish feed for the early morning.

Some poultry keepers can look after their fowls only once a day. If this is in the morning, moistened mash may be fed, followed by throwing grain in the litter to furnish feed for the remainder of the day. If it is in the evening, before dark, a moistened mash may be given, and either after the fowls go to roost or in the morning, before daylight, grain may be scattered in the litter for eating during the day.

A Lesson Learned From the Hens

Shade is necessary, but there must be a good circulation of air in the shade, or it will only half serve its purpose. It may often be observed that poultry having access to space under the floor of the poultry house will stay there in preference to remaining in the house itself, although that affords all the shade they need.

The shade may be as good above the floor as under it, but even when the under space is open on only one side, the circulation of air may be better there.

The explanation of this is that the ground (usually somewhat moist) is cool and the difference between the outside temperature and that of the moist space under the floor is enough greater that the difference between the outside temperature and the temperature in the house to make the movement of the air under the floor more rapid. When the space under the house is open on two or more sides it is usually as comfortable a place in hot weather as can be found.

Spraying for Morning Glory

(Continued from Page 41)

Stronger or weaker sprays proved ineffective in Professor Gray's experiments.

A bucket spray pump or pressure sprayer may be employed. Any type of sprayer throwing a fine mist should give satisfactory results. The spray should moisten the vines thoroughly but not drench them. The spray should not be allowed to fall on the soil any more than is necessary. A heavy infestation requires about three gallons of spray for each 50 yards, or 300 gallons per acre.

Cost and Practicability

In summing up the effectiveness of the arsenical treatment, Professor Gray says:

"The experiments have shown that even as many as six successive applications of the spray described above produce no injurious effect on the soil. The foliage of all plants, however, is severely injured by the spray. The application of the method is therefore limited to cases in which the spray can be applied to the morning glory without coming in contact with the foliage of crops. The treatment can be given on infested land which is utilized for the growing of any annual crop which is harvested by July or August. The spray can be used in orchards of vineyards if care is exercised to prevent it from reaching the trees or vines.

"The method described cannot as yet be said to be one of eradication. It has been demonstrated, however, that 85 to 90 per cent of the morning glory roots on the plots near the coast can be killed to a depth of four feet or more by the application of a properly-timed spray to mature vines. New sprouts will emerge from the stubs of the partially killed roots and will eventually reach the surface and produce new vines. Under these conditions they are very puny, the leaves being only about one-fourth of the normal size and of a sickly yellowish color. The new growth is quite different from the normal trailing vine. When the new shoot reaches the surface, a thick clump of erect branches is produced not more than eight or nine inches in length. The majority of the new shoots consume from seven months to one year in reaching the surface so that a crop can be well established on the land or an early crop harvested without serious interference from the weed.

"The abnormal condition of the vines originating from the stubs of the partially destroyed roots and the enfeebled condition of these root stubs lead one to believe that an annual fall spraying may eventually eradicate the weed. At any rate, the cost of the materials for the spray treatment does not exceed $1.50 per acre in normal times, nor $5 per acre at war prices, and is therefore practicable as a control measure."

Danger of Poisoning

Extraordinary precautions should be used in handling the poison and in guarding treated areas. Poisoned weeds are almost sure death to livestock if eaten in any quantity, and seemingly most animals are very fond of sprayed plants.

Even the smoke of sprayed weeds, when they are burned, may carry sufficient poison to injure the person inhaling it. All life, whether animal or vegetable, is very susceptible to this deadly poison, and soils may be rendered sterile for long periods of time by absorption into the top crust, of quantities of the arsenic.

If extensive spraying is to be done, the hands should be protected with rubber gloves or smeared with wool-fat or some other adhesive grease to prevent absorption of the liquid; the eyes should be protected by goggles, and the face should be greased.

New Feed Law

Poultrymen as well as livestock raisers are affected by the new law on feedstuffs, which goes into effect November first. The benefits of this act, known as Senate Bill 93, should be far-reaching. The law defines standards for commercial feedstuffs and also provides penalties for misbranding and incorrectly listing ingredients. Each package must be labeled and the contents of all mixed feeds stated on the tags. A similar law in Washington is regarded very highly by buyers of commercial feedstuffs and the California law has the approval of the legitimate dealers, as it will assure all of honest competition, as well as protecting the consumer. Leading dealers have expressed the opinion that the result of this new law will be to increase the confidence in and purchase of ready-mixed, well-balanced feeds.

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ORCHARD and FARM

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The War on Citrus Pests

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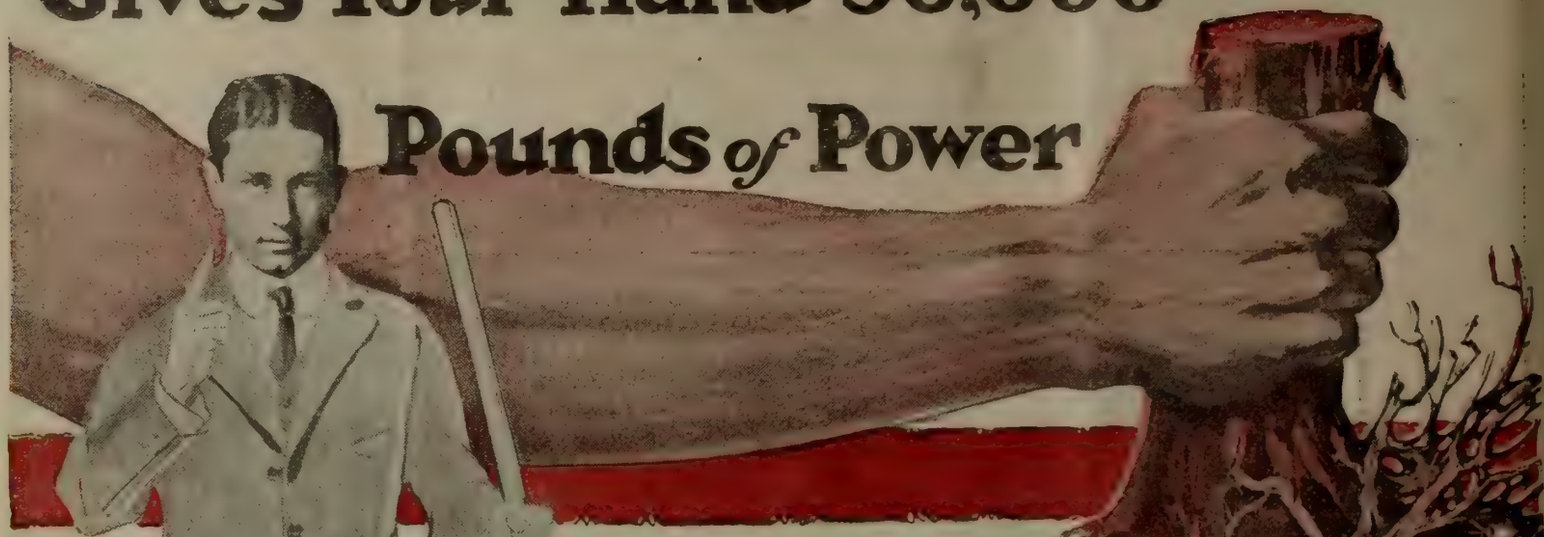
Fall Work in the Orchard

My K Hand Stump Puller

Gives Your Hand 96,000

Pounds of Power



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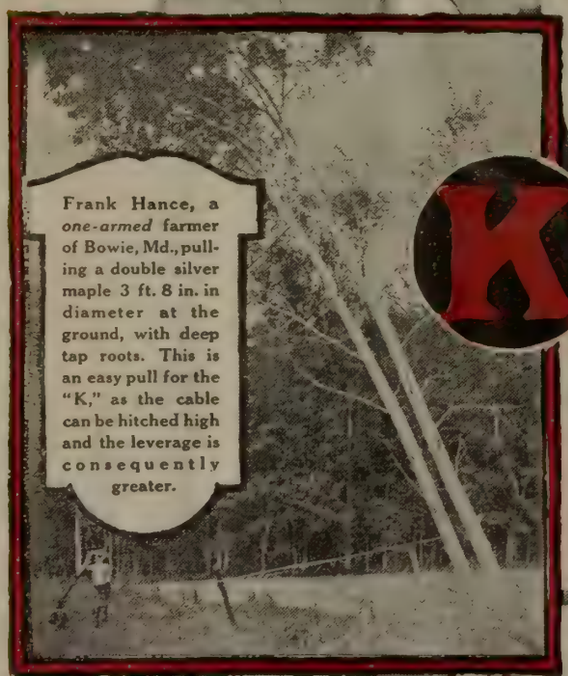

Frank Hance, a *one-armed* farmer of Bowie, Md., pulling a double silver maple 3 ft. 8 in. in diameter at the ground, with deep tap roots. This is an easy pull for the "K," as the cable can be hitched high and the leverage is consequently greater.

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The "K" works on the leverage principle of the ordinary lifting jack, except that the power is applied on a cog-wheel instead of a standard. 100 lbs. push on the lever develops a 48-ton pull on the stump—all an inch steel cable will hold. One man operates it alone—no teams to pay for—no walking.

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Made of finest steel—guaranteed against breakage. Weighs only 171 lbs.—easily carried or hauled about on its own truck wheels. Has two speeds—60 feet per minute for hauling in cable or for small stumps—slow speed for heavy pulls. *Works equally well on hillsides and marshes where horses can not* work

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H. G. Hunzicker of Foster, Wash., pulling a 24-inch fir stump with deep tap roots out of hard ground, without using powder or cutting any roots.

Tear Out and Mail Today

The Fitzpatrick Products Corp.
Box 25 99 John St., New York
182 Fifth St., San Francisco

Send me full particulars on your special offer and your free booklet on Land Clearing.

Name _____

Address _____

Personal, Pleasant and Profitable Pointers

THOSE two effective weapons, the rolling-pin and feminine tears, have long since settled the controversy as to which sex constitutes the better half of the matrimonial partnership. It is generally agreed, also, that marketing is the better half of agriculture. But which is the better half of a farm magazine, the editorial (news) columns, or the advertisements?

Now I'll confess that I might be prejudiced. At any rate let us not jump at conclusions. That's sometimes dangerous. For example, there is the story about the little dog named August which had the habit of jumping at conclusions. One day he jumped at a mule's conclusion. The next day was the first of September, the inference being, of course, that this was the last of August!

No, we won't jump at conclusions, but just glance through the list of questions given below. The answer to every one of them may be found in the advertising columns of the page or pages listed opposite. Is not this a surprise to you? It was to me!

Editor.

Where can I get a free textbook on farm blasting? 18, 41
Where can I buy seed of the saltbush described on Page 9? 18
Is there a successful, natural cure for constipation, requiring no medicine, special diet or burdensome exercises? 18
What can I do to cure my engine of pumping oil and how can I increase power, decrease carbon and save gas? 19
Can I buy a really high-grade touring car for less than $1000? 4

Simon Simple will not buy
A hay-press; seems to figger
When his wagon's piled up high,
It makes his crop look bigger!
—Justin Nutt.

Some Folks Read the Dictionary

And insist that it is more fascinating than Pilgrim's Progress or the Police Gazette. I've always felt that a dictionary, like a lawyer, was useful principally in settling an argument. However, it is surprising what interesting things may be found in something that might ordinarily be considered dry reading.

For instance, it is possible to find a laugh or a tear in the "want ads"; some authorities even insist that they represent the truest human interest document ever assembled. We smile with (or at) the woman who advertises "a piano for sale by a widow with carved legs," or perhaps feel a mist before our eyes when we read of the "old black purse, containing all of an old man's savings, lost somewhere on Main street."

Now, Orchard and Farm's Classified Market Place may not furnish these same thrills found in the "liners" of the daily papers, but we have many letters showing that OUR "liners" have been the foundations for success and even fortunes. Think of the possibilities (strictly from a business standpoint) in the following list, selected at random from the classified headings in this issue:

Farms for Sale; Real Estate for Exchange; Expert Horticultural Service; Schools and Colleges; Nursery Trees and Plants; Farms Wanted; Second-hand Machinery; Engines; Auto Accessories; Books Bought and Sold; Seeds; Livestock for Sale; Agents Wanted; Poultry and Poultry Supplies; Rabbits and Pigeons; Guinea Pigs; Capon Specialist; Ducks; Razor Blades Sharpened; Money to Loan, etc., etc.

Why not make it a regular habit to take advantage of this valuable feature of Orchard and Farm? (P. S.—If you have anything you want to keep, don't advertise it on these pages, because even though it costs you only 22 cents a line, you'll have to spend ten times that amount in postage turning down insistent buyers!)

(See Pages 42 and 43.)

Company! A party! Prohibition! What shall I serve to drink? 12
Is today the day they give babies away with a half a pound o' tea? No, but they really are giving away tea. Who? 12
What can I do to lighten chores and save the backs of all members of the farm family?.... 14
Where can I buy an absolutely guaranteed irrigating pump? 14, 21, 22, 38
Is there any relief from the high prices of men's clothes? 17
Where can I get record sheets for my dairy cows? 38
Is there really a successful auto tire that does not require inflation—an airless tire at last?.. 39
What about that special California-type garden tractor? 39

What About That Contest?

Be sure to read the announcement on Page 34 which tells how Orchard and Farm plans to distribute $136 in cash prizes among its readers merely for writing letters.

This contest ends January 1. See full details on Page 34 of this issue.

Where can I buy reliable shoes by mail (free catalog) 39
Can rupture be relieved without a truss or an operation? 40
Where can I get tires at unheard-of low prices and a reliner free with every tire?..... 40
Is there just one cause for practically all tire-trouble? 40
Where can I buy reliable disinfectants and insect-killers made in California? 39
A tractor ballasted with water? You bet there is! 49
How can I heat the "spare" room or bathroom with the least investment and expense?..... 30
What is the future for nectarines? 30
Where can I buy high-grade melilotus seed and why should I plant it this fall? 30

Just Squirrel Food

If you must tear loose, why not swear by instead of at something?

It's better to be behind a good cause than ahead of your income.

Prohibition may have decreased the drunks but it certainly has increased the drinks! (Bevo Junction papers please copy.)

Some people are so busy living to learn that they never learn to live.

Yolo County's producing tobacco and cabbage. Here's hoping they don't cross!

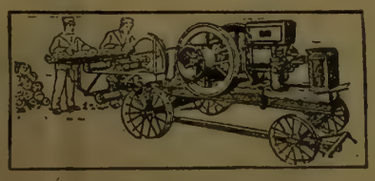
Who is it that sends free a large booklet on the care and breeding of Angora goats?..... 35
Where can I buy good milch goats?..... 35
Is it possible to double winter egg production?..9, 46
How can I solve the dairy help problem? 10
Is there a cheap hog-feed that will actually make double the gains possible with barley and tankage? 10
Can fruit trees be bred and pedigreed the same as animals? 10
What is the most important factor for the tractor buyer to consider? 11
Where can I sell my market turkeys and what are they worth? 11, 26
Where can I get accurate information on nitrate of soda fertilizer? 19
How can I get a special price on a kerosene lamp that gives 300 candlepower? 19

WHERE is the man who says November is a month of chill and gloom? Rescue him from his rheumatic saturation! Drag him forth from his cramped loneliness into the charmed circle before the crackling logs! Offer him rosy, red apples and sweet, rich nuts and homely philosophy and love and laughter and good cheer.

Teach him that the gentle rain speaks not of discomfort but of future wealth. Point out to him the joy of clean-washed air and crisp mornings, and long evenings with the companionship of good books. Show him that November is at once a period of thanksgiving and of hope—thanksgiving for the bountiful crops just harvested, hope for the year to come.

Then here's to November—gray only to those of narrow vision; chill only to those who cannot find warmth in seeking warmth for others; depressing only for those who lack imaginataion and enthusiasm; disagreeable only to those who, in the fog of early morning, forget the brisk, tonic ozone of midday. Here's to November, coziest of months!—June Francis Dale.

Where can I get free information on how to select and care for saws and other carpenter tools? 40
Where can I get a lubrication chart showing the correct oils and greases for my car or tractor?.. 40
How can I keep in touch with the newest ideas in homefurnishing? 41
What shall I do about those stumps? Is there really an easy way to pull them out?.....2, 41, 47
Is there an improvement on the old cross-cut saw—something that can be operated by one man? There is! See page 41
What makes the difference between good and poor gasoline? 41
Are telephone rates exhorbitant? 44
Can I buy a reliable, high-power (new) rifle for less than $8? 30
Where can I buy reliable used tires cheap?..... 30
How can I be sure of getting real shoe value in these days of high prices? 31, 39
What's the name of that new California-made tractor that made such a sensation at the tractor show? 31, 39



Your Wood Lot

Are you making the most of it? November is a good month to oil and adjust the circular or drag saw, see that the engine is in good order and prepare to save on coal bills. By the way, a power saw, purchased this winter, may pay for itself before spring, especially if you can do a little custom work. Coal is scarce and expensive!

Where can I sell my old grain bags and where can I buy new and second-hand ones cheap?.. 20
What has paraffin to do with efficient tractor operation? 21
Where can I buy a complete book on fruit growing in California, written in plain language and sold at a reasonable price?..... 21
Who will solve my irrigation engineering problems? 14, 21, 22, 38
Where can I buy breeding rabbits with a guarantee for the sale of all I can raise?.....22, 28
Where can I get plans for poultry houses for 10 cents? 22
How can I buy a reliable gasoline engine at a low price and on easy terms? 22
What is the solution of my hauling problems?.... 23
What can I feed my hens for maximum egg production? 24, 25, 26
Where can I get a text-book on farming for next to nothing? 27
How can I be sure of the quality of the underwear I buy? 28
Have you heard that it is possible to bore 100-foot wells by hand? 44
Where can I buy sash, doors and other builders' supplies at a great saving? 44
Who sells belts of all kinds? 44
How can I convert my Ford into a power-plant to operate farm machinery? 44
How can I be sure of success in hunting?..... 45
Is there really a quick, reliable, efficient home cure for rheumatism? 45
Where can I buy certified alfalfa seed? 45
Is a tractor a year-'round investment? 15
Where can I get free information on how to trap, and ship furs 35
Is there any real relief for my asthma?..... 28
Where can I get information about brooder stoves? 28
Can I buy fish cheaper direct from the packers?.. 28
Where can I get information about a low-cost, reliable water system? 29
Where can I buy lumber at 40 per cent saving?.. 29
How can I transform my old kerosene lamps into lamps giving three times as much light?..... 29
Where can I buy a motor-garden-cultivator for only $185. and only 10 per cent down?..... 29
How can I smoke meat on the farm?..... 29
Is there a successful 16-valve, direct-drive tractor? 29
Where can I get estimates and information on underground irrigating systems? 38
Where can I buy a grain drill at an unusually low price? 15
How can I get "in on" some of these big oil profits? 19
Who can advise me on fertilizer for top-dressing? 20
How can I make big profits from almonds?..... 20
Who has punch in his advertisement, if not in his product? 32
Why is mica used in axle grease? 32
Where and how can I secure a patent on my invention? 32
Now that Prohibition's with us, why not get acquainted with THE CAMEL? 33
How can I prevent rodents from gnawing harness? 33
Where can I get free information on all phases of farming and gardening and how can I tell what is timely to plant? 33
Can I buy large ornamental trees and plants that will grow successfully, so that it will not be necessary to wait for small ones to mature?.. 22
How can I saw 25 cords of wood a day by myself? 37
Where can I have my films developed?..... 37
Where can I have my auto repaired any time of night in Los Angeles? 37
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Is there an easier way to dig ditches?..... 37
Where can I save money on pipe? 37
What is this dope about innoculating clover seed and greatly increasing the yield? 38
Where can I buy reliable well-casing?..... 37
Where can I get a book of amazing facts about this wonderful State for the ridiculously low price of 25 cents? 21
Feed farm animals on cocoanuts? Sure! Expensive? No, cheap! 20
Where can I get good agricultural land for from $10 to $17.50 an acre? 34
Is it true that the subscription rate for Orchard and Farm is to be increased?..... 26
How can I solve my tire problem?..... 46

Save Every Copy

Of Orchard and Farm. At the end of the year we shall publish a complete index of all the numbers for 1919. You can then bind the volume for ready reference, and quickly find information upon any desired subject. Many of our readers find it easier to save each copy than to clip out special articles; frequently, moreover, the subscriber will destroy one valuable article in cutting out another. This new plan, therefore, should make Orchard and Farm even more useful to its big host of friends. But in order to secure the benefits of the complete index for the year, you must preserve your copy of each issue. And don't let your subscription expire.

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More than 13,000 men are building your Maxwell

IMAGINE 13,000 men devoting themselves to a single Maxwell. Yet that is the picture which a little journey through the eight great Maxwell plants supplies.

If they built but that one car in a day its cost to you would represent a king's ransom.

But they are so well organized, their work so very definite, they are so expert in the special one thing they do, and they are aided by so many thousands of uncanny and superhuman machines, whose accuracy is down to 1/1000 of an inch, that you pay but a small price for a Maxwell.

A great aid to the economy of manufacture is the use of many, many millions of dollars so that a 10-cent piece saved on a bit of material often runs into amazing figures.

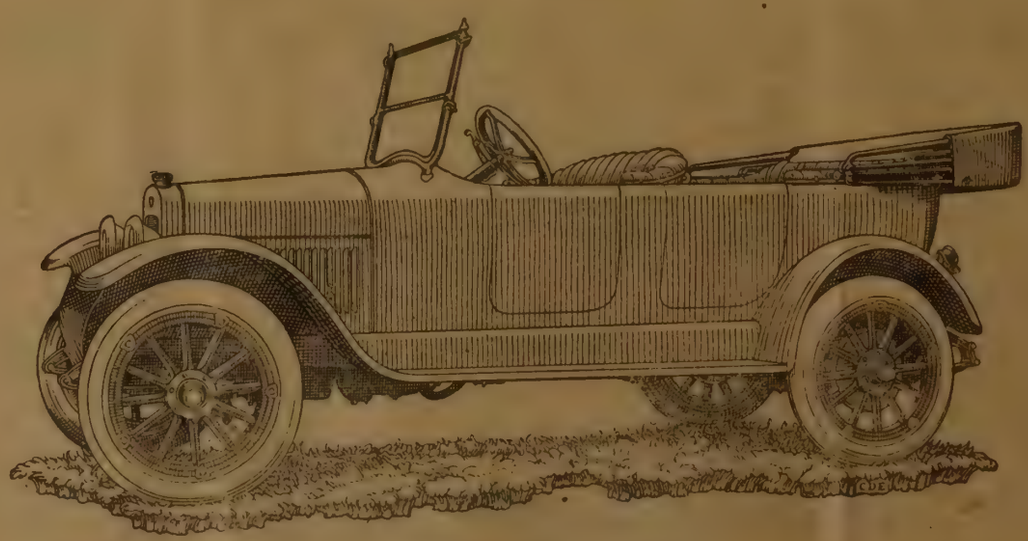
Thus the big staff of purchasing experts for Maxwell become your purchasing experts and the saving goes on to you in the price.

$985 is indeed a small sum to pay for a great value in a great car like Maxwell.

Maxwell

More miles per gallon
More miles on tires

MAXWELL MOTOR COMPANY, Inc.
DETROIT, MICHIGAN



ORCHARD and FARM

VOL. XXXI. NOVEMBER, 1919 No. 11

Heads High—But Feet on the Ground

By H. E. Van Norman

Dean of the University Farm School, Davis.

(Written Especially for Orchard and Farm)

ALL modern enterprise, agricultural or otherwise, depends upon the successful combination of three essential factors:

First, the brains to conceive, organize and carry out the enterprise;

Second, the capital to provide land, buildings, equipment, raw material and wages, until the income of the enterprise will do so;

Third, labor of varying degrees of skill, from the least expensive manual labor to the most expensive mental labor.

The sum total—the result of the successful combination of brains, capital and labor—is the salable product, whether it is automobiles, shoes, transportation, cotton, wool, grain or various food products. It is apparent to any thoughtful person that the absence or shortage of any one of the three great factors absolutely limits the success of the enterprise.

The total or gross income from the sale of the products is the reward for

EACH ONE IS

the successful effort of all the factors. The mental labor, the brain power, the productive force, the leadership, the ability to look into the future and anticipate the probable combination of conditions which must be met in order to insure the success of the enterprise, are just as vital as is the money to buy things or the labor to do the work. The absence of any one prevents the success of the enterprise as effectually as the loss of one leg of a three-legged stool will prevent its standing, no matter how good are the remaining two.

There can be no profit, no gain in debating which is the more important, if each is absolutely essential.

Who Shall Be Benefited?

The reward for the successful combination of effort must be divided between all the forces that create the article. The reward or dividend accruing from the successful carrying on of the enterprise must be distributed to all the forces that go to make the enterprise possible. However, the three great forces do not have equal claim on this reward. The human element, the laborer, must eat, must eat every day, three times a day. He must, therefore, be rewarded, whether the capital secures any reward or not. Even if the bills for material are not paid, the laborer must eat; therefore, the first great claim on the enterprise is a living wage for the human laborer. Please note and emphasize the term, "a living wage."

Second, the material involved in the manufacture or process, or required in order to make possible the rendering of the service, must be paid for. Finally, the money or capital which made possible the buying of the ground, assembling of the material and the carrying on of the business until profits were secured, is entitled to a minimum reward. This reward, commonly called "interest," is just as legitimate reward to the man who has money to invest as is the reward to him who has the labor to give with his hands or his head, because the man who has money to invest is the man who has refrained from spending it for other needs which might or might not render service to others than himself.

In the present organization of our industrial life a great deal of the money which makes business possible is supplied or loaned by those who have no word or say in the active management of the enterprise; for instance, the stockholders in a railroad company, or a street car company, or a manufacturing plant, even though they have supplied the money, have little or nothing to say as to how the money is to be spent. This has been delegated to a board of directors, or a manager who furnishes the brains and has the vision — who conceives the plan by which the enterprise shall be carried to a successful conclusion. Therefore, this brain, which represents the management or successful leadership of the enterprise, is entitled to a minimum living wage.

HELPLESS WITHOUT

The living wage of all men is not necessarily the same. We must each recognize this fact: Just as we feel that we have more ability than others whom we know, others may, at the same time, possess more ability than we. The scale of living, the minimum living wage, therefore, will vary according to the variation in each one's inherent ability.

What About the Remainder?

Granted now, that the first reward or living wage has been paid to all of the individuals concerned in the enterprise, from the lowest laborer to the managing mind, each simply in proportion to his earning power; second, that capital has received a minimum reward; there should remain for distribution an additional sum or reward, which I, for want of a better term, call the variable reward.

THE OTHER TWO

This variable reward is dependent upon the ability of the managing mind to plan rightly, to organize wisely and to anticipate successfully the demand for the product. The management must meet all of the hazards of business, whether dependable upon the prosperity of the country, on weather conditions, or on the unknown appetite or demand of the public for the product which the enterprise has turned out. And whether this product be street car service, telephone service, railroad service, food products, clothing, pianos or luxuries, there is this unknown reward—this variable reward.

In the past men have saved their money and invested it in enterprises in which this variable reward looked big. The man who has saved money can buy Government bonds and be sure of 4 per cent interest. Yet he risks his thousands of dollars in the building of a railroad across the United States in the hope that he might receive 25, 50 or 75 per cent reward. He takes the chance of losing all that he put in or

(Continued on Page 31.)

WE'VE PLENTY OF MEN BUT A SHORTAGE OF LABOR

RUSSIA died of oratory. And Russia was one of the greatest agricultural countries in the world. Thought and hard work are a good team to pull. Conversation and idleness are a balky pair.

It seems as though farm workers nowadays are merely talking over instead of working over their problems! This condition may account for the fact that in spite of a supposed increase in available agricultural labor, scores of the finest farming, horticultural and livestock enterprises in the West literally have been driven out of business during the past year or two because of inability of the owners or managers to secure efficient, reliable help at a fair wage. Are we, indeed, suffering from an overproduction of non-producers?

If farm workers as well as industrial workers, could solve their problems while at work, instead of stopping to discuss and organize and strike and move on, could they not the more quickly attain their own ends? It is a fine thing for any class to fight for its rights; but as soon as fighting becomes the main order of the day, production ceases. Working fighters may bring down the high cost of living, but fighting workers can only bring down denunciation and disaster.

Resting at the plow handles is a good thing if not overdone. But some men have to stop working to think. This is even worse than to stop thinking to work!

Surely no thinking person doubts the right of workers to organize and to devote part of their energies towards the betterment of their own conditions! But individuals or organizations seeking to forward special interests are bound to be governed by proper regard for the general public interests. Abuse of power is as serious on the side of the worker as that of the employer!

Such a situation as now confronts this nation calls for a search for fundamentals. And after all superficial structures have crumbled, there remains but one solid foundation for all to stand upon—the simple Golden Rule, "Do unto others—." Unfortunately, however, the modern interpretation usually omits the word "unto."

All for one; one for all, and a square deal for EVERYBODY—that is the principle that holds out hope for all of us, not "Each for himself and the devil take the hindmost."

Education and Christianity will show the way through all difficulties. This article by Dean Van Norman embodies both principles.

Some persons argue that the labor problem is a dead issue, but I know a rancher who says it is more alive than any man he has employed this year! —The Editor.

Uncle Wiseacre Says:

Self-raisin' flour don't point t' self-raisin' wheat. Conversation is cheaper than fertilizer but it can't be depended on t' increase yields. Never talk about a dollar raise until ye can raise a dollar. What we need is less suspicion and more ambition; less "Red" work and more head-work; less jawin' and more sawin'; less conversation and more perspiration!

War to the Death on the Citrus Pests

By Harry S. Smith

In Charge of Pest Control, State Department of Agriculture

IF a tax of 4 per cent were levied on the gross sales of citrus fruits the grower would have to be shown conclusively that he received his money's worth in return.

During the past year the amount of money spent in the control of the insect pests of this great industry exceeded three million dollars, or about 4 per cent of the gross value returned to the grower for his product during the same period. This tax was paid by the growers and we may be sure of their conviction that the money was well spent, for our citrus growers are good business men.

On first thought, the necessity of expending annually such a sum of money would seem to be a serious handicap to the citrus industry. The fact is, however, that this great expenditure is brought about because citrus growers, perhaps more than any other class of producers, recognize the importance of keeping pests in check. It is not necessitated, as erroneously supposed, by the prevalence of an unusual number of pests as compared with other branches of production.

Factors at Work

The pest control problems of the citrus grower, however, are numerous and varied, as are the institutions whose business it is to assist him in a solution of them. But, although the problems and institutions are many, the work is segregated in such a way that when it is once explained there is no difficulty in understanding the service or in knowing to whom the various problems shall be referred. It is the writer's purpose to explain the functions of each institution so that the grower will know to whom he must apply for assistance and advice in any emergency that may arise.

There are three State and Federal institutions which aim to serve the citrus grower in the capacity above referred to. These are the Bureau of Entomology of the U. S. Department of Agriculture, the Citrus Experiment Station of the University of California and the Office of Pest Control of the State Department of Agriculture. While each of these institutions holds itself in readiness to serve the grower in any capacity, and there is of necessity more or less overlapping of function, it will be found that there is a rather definite division of duties between them.

The U. S. Bureau of Entomology is represented in California by the Section of Subtropical Fruit Insect Investigations, maintaining a laboratory at 824 North Curtis avenue, Alhambra, in charge of R. S. Woglum. Here technical work is conducted on the life-histories and habits of insect pests of citrus and their control by means of fumigation and spraying. The University of California carries on a similar line of investigation at the Citrus Experiment Station at Riverside, of which Dr. J. T. Barrett is director, the entomological work being in charge of Prof. H. J. Quayle, and the plant disease work in charge of Dr. H. S. Fawcett. Problems of fumigation or spraying for citrus insects should be referred to either of these institutions and problems in connection with fungous or bacterial diseases of citrus should be referred to the Riverside Station.

The Office of Pest Control of the State Department of Agriculture has its headquarters at Sacramento. Insofar as the citrus industry is concerned its function is primarily the control of insect pests by the biological or "parasite" method; the prevention of spread of insect pests and plant diseases from infested or infected localities to clean areas, and the control of rodent and other vertebrate pests.

For the control of mealy bugs by the use of their natural enemies, the Office of Pest Control conducts a main station at 827 North Olive street, Alhambra, in charge of H. M. Armitage, with a branch station at Santa Paula, in charge of A. A. Brock, and is now establishing stations in San Diego County, and at Upland in co-operation with San Bernardino County, the latter for the control of the citrophilus mealy bug. The success of the work against the citrus mealy bug has been remarkable, particularly in Ventura County.

Where the orchards have for years suffered heavily from this pest, and where the growers have spent thousands of dollars annually in a vain attempt to control it, we have, by the breeding and liberating of large numbers of natural enemies in the orchards, reduced the mealy bug to such a condition that one could almost with safety to his purse offer a reward for a single specimen of the pest. And this result has been brought about at a cost of only a few hundred dollars. The problem of the citrus mealy bug has undoubtedly been solved, and it is hoped that with the establishment of the Upland branch the citrophilus mealy bug will meet a similar fate.

However, "eternal vigilance is the price of success" in this work, and any slackening of our efforts will mean a quick return of the orchards to their former infested condition. Hence a considerable amount of careful inspection will have to be carried on and a large reserve supply of beneficial insects must be kept available at all times to prevent a recurrence of the outbreak.

Control of Citrophilus

The citrophilus mealy bug is still found only in a few isolated districts in the citrus region; therefore, the question of preventing its further spread is of greatest importance. Work is now being conducted having as its object the mechanical sterilization of picking boxes at the packing houses, in order to prevent mealy bugs from being carried back to clean groves. This work is in charge of D. B. Mackie, Field Entomologist, and substantial progress already has been made.

A laboratory is also maintained by the Office of Pest Control at 806 Commonwealth avenue, Alhambra, in charge of Harold Compere, for the purpose of breeding and liberating natural enemies of the black scale, the worst pest of citrus fruits. This work is in its infancy and has not progressed far enough to enable us to say just what its practical outcome will be, but at present it looks very promising. A parasite collector of the Department has been sent to South Africa where, we are informed by the Government Entomologist, the black scale is held completely in subjection by its natural enemies. It is hoped, as a result of this expedition, to obtain additional parasites for use against the black scale in California.

Rodent Eradication

The question of the control of rodents and other similar pests in citrus orchards is at times of great importance, and the Office of Pest Control maintains a section devoted to this work, prepared to give assistance to the citrus growers at any time. This section is in charge of W. C. Jacobsen, with headquarters at Sacramento.

In addition to the three State and Federal institutions mentioned above, the counties in the citrus districts maintain a service of their own through the county horticultural commissioners and farm advisors. Through their intimate contact with the individual growers and their specialized knowledge of local conditions, these officers render very efficient aid in many of the pest control problems which arise. The county horticultural commissioners are also horticultural police officers, the law clothing them with authority to compel the abatement of pests when in their opinion the welfare of the community demands it.

With the many sources of help outlined above, the interests of the citrus grower are very well provided

(Continued on Page 19.)

MY IMPRESSIONS of the KING

ALBERT OF BELGIUM

Most democratic of monarchs! Who does not feel the deepest admiration for him and his gracious Queen? Orchard and Farm is the only publication to present Luther Burbank's own story of his recent meeting with the Belgian Royal party, written especially for this magazine. Burbank was also one of the few Americans privileged to entertain the King during his visit to this country twenty years ago.—Ed.

by Luther Burbank

SINCE 1915, I have been forced, in order to make any headway with my work, to limit the great number of visitors who desired to call at my home. I had, before that date, received something like 100,000 callers, many of whom came from far-away countries—often from the most remote corners of the globe, and among them were very many of the really great men and women of the earth; statesmen, diplomats, presidents, princes, princesses, generals, governors, authors, philosophers, inventors, explorers, financiers, philanthropists, reformers, scientists and innumerable others, representing every phase of human development; and last, but not least—the very heart of the nation—thousands of the common, every-day people.

Among those who made themselves remembered with deepest admiration, love and esteem, was the young prince and heir-apparent to the Belgian throne, now Albert, King of Belgium. He was then visiting this country, following a special education at home in social science and economics, in order to become familiar with our agricultural, horticultural, social, educational, governmental, transportation and mining systems, and was an honored guest at my home for a few summer days twenty years ago. Only a very few Californians were aware of his visit to America, and of course to California, as he disliked ostentation and publicity.

My memory of him is as a most unassuming, democratic, joyous, genial companion. He was then twenty-five years of age, tall (over six feet), clean, straight, lithe, with fine, clear, bright eyes, light brown hair and mustache, and with a youthful, happy spirit, ready and quick to learn anything from any source which might benefit his beloved people, who then had one of the most democratic governments in existence. The present Crown Prince has many of these same qualities which endeared his father, as a youth, to all who knew him. Since then, the days have come when he and his faithful Queen Elizabeth have been tried with fire and fury in which they have proved themselves to be among the saviors of civilization.

The King is now one of the most heroic, as well as pathetic figures of the twentieth century, for with conspicuous bravery, he personally commanded the Belgian army against the cruel invaders. Those who have enjoyed intimate contact with him during his present trip, knowing his wonderful record of devotion, can readily understand why he is the idol of his people.

In July, 1914, King Albert was the faithful and beloved ruler of a peaceful and prosperous nation; sixty days later Belgium had been over-run by the invaders. Since that terrible event, this most peaceful, most democratic and most beloved of the rulers of Europe has made the world his everlasting debtor by staying the first mad rush of the German hordes.

Knowing these facts, and having the joyous memory of his former visit, I was happy to receive a summons by telephone from Santa Barbara to meet him in San Francisco on his arrival. It was explained that his stay in California must be limited and that his time while here was not his own again to visit Santa Rosa, where long ago he rode and tramped with me to Bennett, Rincon and Los Guillicos valleys, Rincon Heights, overlooking the valley of Santa Rosa, and other places of interest. Nothing at that time escaped his notice, from the little bright-eyed lizards, to our orchards, vineyards and gardens, trees, flowers, forest-covered mountains, and rich, yellow, grass-covered hills and valleys. He was indeed happy in health and the fullness of life.

The other day when I met him, he was the same companionable, friendly man, but with a shade of pathos in his voice and manner, which only added a new flower to his character. Kings in general are good as other people, and better than some of them if they even begin to fulfill their mission in life; but unfortunately the temptation to take advantage of their position, sometimes, as with others, leads them to look to their own personal interest rather than to that of their people. King Albert, however, has proved to be pure gold through and through on all occasions, and this beloved royal couple will go down to posterity in prose and poetry, music and drama, as models for others to follow.

No less impressive than Albert's greatness is the simple sincerity and nobility of soul of the gracious, dainty, and highly-accomplished Queen, who has proved herself so true to her King and to her Belgium.

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The Romance of the Rice---California's Bonanza Cereal Crop

The first rice shipment of this year's crop in the Sacramento Valley sold at six cents a pound. This is the highest price in the history of California rice growing, and is one cent above the figure predicted several months ago. The yield per acre in the valley this year averages thirty sacks. This is ten sacks higher than the yield in the Southern States. A number of growers, experimenting with the Edith or Western variety of rice, report an average yield of thirty-eight sacks per acre of this variety.

By Irvin Engler

NO PHASE or feature of California's agricultural development has attracted more attention or created more interest than the rapid expansion of the rice industry in the Sacramento Valley. Just as the cry of "gold" attracted thousands of people to this section of the State 70 years ago, the rich returns and wide possibilities of rice culture are now the alluring magnet for hundreds of agricultural "prospectors."

A few figures serve to show the extent of this new and spectacular movement. Thirteen years ago first experiments were being made in rice growing in the Sacramento Valley; seven years ago rice was grown commercially for the first time; five years ago there were 16,000 acres under cultivation; this year there were 140,050 acres which yielded more than four million bags of rice, bringing the growers a total return of nearly $25,000,000!

Typical Rice Field

In the Sacramento Valley. Below is illustrated a barge load of rice on its journey from the fields of the upper valley to the Sacramento rice mills, via the Sacramento River. The cargo is valued at a figure in ex ess of $50,000.

Big Returns to Grower

These figures are very significant. Together with the information that a field of 100 acres generally gives the grower a net return of about $7500 a year, they readily explain the enthusiastic and optimistic attitude of the prospective rice farmer.

But it is well to bear in mind that a venture into the rice growing business should be given careful preliminary consideration, and that sufficient financial backing is required. One who expects to make a success of it should be prepared to meet not only the expense of acquiring the land but also that of putting it in proper condition, securing a plentiful supply of water, combating weed pests such as "water grass," and meeting other emergencies as they arise. As an illustration of possible difficulties, 3500 acres of rice was planted in Placer County this year, and because sufficient water could not be obtained it was necessary to abandon all but 800 acres. The water problem is the biggest of all problems for the rice grower.

In the Sacramento Valley

A combination of circumstances has been responsible for the rapid growth of the rice industry in the Sacramento Valley; namely, climatic conditions exactly suited for the culture and the discovery that rice could be grown on lands that formerly were considered almost worthless. It was found that the grain would grow in equal abundance in the shallow, impoverished soil in the upper part of the valley, in the black adobe on the east side of the Sacramento River, and in the red soil of clay mixture in the lower part of the valley. These lands, used almost exclusively for pasturage, could be secured at a very low purchase price when rice culture was in its experimental stages. Now, however, any land adaptable for the purpose is held at an average of $100 an acre. Experts recommend that no one enter into rice culture with a farm of less than 80 acres; it will therefore be seen that a good-sized investment is required simply to "break into" the business, without considering subsequent expenses before a financial return is possible.

The Weed Nuisance

While it has been shown beyond all doubt that rice culture is thoroughly practical in the Sacramento Valley, the yield being from 50 to 80 per cent greater per acre than in the Southern States, experiments are still being carried on, most of them designed to overcome the rice growers' greatest pest—water grass. This weed nuisance is causing a loss of thousands of dollars annually and in some cases has laid waste entire tracts of rice acreage. Here again the prospective rice grower should give consideration to the expense, for water grass can be removed only by wading into the water which irrigates the rice and pulling it with the hands. Labor for this purpose is costly and sometimes hard to secure, due to the nature of the work.

An experiment made by a rice grower near Biggs, California, this year, was noted with much interest as a possible relief from the water grass pest. Working on the theory that water grass cannot get a start if light and air are excluded, this grower turned water into a section of his fields, sowed the rice seed broadcast upon the water and kept the field submerged until the rice had become rooted and gained a "flying start," over the water grass. On this portion of the field there was a splendid stand of rice. Within another year the practicability of this idea may be demonstrated.

Quite accidentally another method of attacking the pest was discovered last year by Joseph H. Stephens, president of the Pacific Rice Growers' Association. After the 1918 crop was harvested on Stephens' place, he turned a flock of turkeys onto the fields to fatten on the scattered grains. Contrary to expectation, the fowl did not feast upon the rice grains, but scratched up water grass and devoured the seeds. Other growers were not as successful, however, for the turkeys were in most cases satisfied with the rice. It is a somewhat general practice to turn sheep onto rice fields at certain times of the year to nibble off water grass. Another menace to the rice crop is the wild duck. This is being met, however, with the co-operation of the Government. Special hunting licenses issued to rice growers were effective this year in keeping wild ducks off the fields while the grain was growing. Several growers report that airplanes furnish a successful means of frightening the birds away.

Disposal of Crop

Problem number three for the rice grower is the marketing of his crop. This can be solved only through a co-operative organization. The Pacific Rice Growers' Association in Sacramento, of which Mr. Stephens is president, and Charles H. Merry secretary, performs this all-important function. During the past two years and including this year the marketing problem has been a comparatively easy one, due to the shortage of the crop all over the world. Even with a big crop this year these foreign countries will be unable to accumulate a surplus for home consumption alone. Consequently there has been a ready market for California rice. A portion of the yield this year will go to Cuba for the first time.

The officials of the association realize that such conditions may not continue, and as a matter of preparedness they are about to launch a great campaign for the stimulation of home consumption. People of the United States are notoriously light rice eaters. The per capita consumption of rice in this country before the war, as shown by statistics gathered by the association, was six pounds a year. When food regulation was inaugurated during the war this increased to eight pounds and now it has returned to the old figure.

Compared with this is a per capita consumption of 147 pounds in Japan, 156 in China, 101 in Italy, 109 in Porto Rio and nine pounds in Sweden. "The people of the United States seem to consider rice somewhat of a luxury," says Merry, "to be used in the making of custards, puddings and desserts. As a matter of fact, there is no grain of higher food value than rice, when cost is considered. We propose to educate the people to this fact in a big campaign of advertising which will go into magazines, newspapers and stores throughout the country. We will show how rice may be prepared for the table in many different ways so that it will come to be

(Continued on Page 20.)

Fall Work in the Orchard---Can the Fruit Grower Afford to Neglect It?

Careful attention to the points mentioned in this article will put the orchard in the best possible shape for the spring, and may mean success instead of failure! Are you making the most of Mr. Weldon's helpful suggestions? Remember that he will be glad to take up any specific orchard problems not covered in his articles. If you desire special information, address him "Care of Orchard and Farm, Los Angeles." It is such features as this that are making Orchard and Farm known all over the West as the "magazine that tells how." If it helps you, tell your friends!

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
Pomologist, Chaffey Junior College of Agriculture

IF THERE is any season when the fruit grower should have time to enjoy the fruits of his labors it is the fall. After the months of strenuous work involving closest application to every detail of orchard management, the grower may feel inclined to neglect the fall work. And he can do so, and suffer less as a rule, than at any other season.

There are, however, certain things that can be done in the fall better than at any other time and there are some duties, neglect of which may mean a failure of the succeeding season's crop.

Fall Irrigation

One very important factor which contributes to the health of the trees and the character of the crop is fall irrigation. I doubt if the average orchardist yet recognizes the value in applying water after the harvest season. In a great many localities the supply is adequate and there is no excuse for not irrigating; in others no water is available and dependence must be placed upon the natural rainfall.

What are the benefits of a fall application of water? In the first place, an examination of the soil will reveal the fact that the crop just matured and harvested has exhausted the supply of soil-moisture unless late irrigation has been practiced.

The devitalized trees cannot be expected to go through the first few months of the winter season in this condition without serious injury. The hungry roots are affected and there is apt to be more or less dying of the branches, if the rains do not soak the ground before the winter sets in. Moisture is evaporated from the branches even during winter months.

Fruit buds for the succeeding crop are formed during the season of active growth and productivity, and while it is true that they are dormant during the winter months observations indicate that fall irrigation tends to strengthen them and put them in the best possible condition, so that the bloom will be healthy and the chances for a good crop of fruit thereby increased. Dying back of twigs also will be reduced to a minimum.

In recommending fall irrigation it is always wise to caution against the application of water at a time when it would start new growth; that is, before the trees have become perfectly dormant. The damage is greatly increased in places where temperatures go below the freezing point in the early fall. The tender growth, if started by fall irrigation, will freeze and the injury to trees may be severe. After the foliage has dropped and the terminal buds have hardened there is no danger in the application of water.

Fall Plowing

Like fall irrigation, fall plowing is often neglected because of the tendency to slacken the pace of work after the harvest season. While many an orchard does well without fall plowing, there is no denying the benefits that result from the practice. In California the rainy season may not begin until November and there is plenty of time to plow before the soil becomes too wet. Advantage may be taken of the first light rains which soak the soil to a depth of a few inches. Once plowed, the ground in the orchard is in a much more receptive condition for later rains and there is little or no loss from running off or evaporation.

The season's crop of leaves, which it is desirable to conserve as fertilizer, is turned under before the winds have had a chance to blow them away. Thus they will decay and become quickly incorporated with the soil.

Fall Cover Crop

The average orchard soil needs a cover crop frequently, for the addition of humus and nitrogen. The climate of California is fortunately suitable over a wide area for fall cover-crop sowing. While clover, vetches, peas and other legumes are preferable because of their ability to add nitrogen to the soil, they cannot always be grown and some other crop such as rye may be planted to advantage.

The earlier that any desired cover crop can be sown in the fall, the better. Generally it is desirable to wait until after the first rains have put the soil into good condition, but where fall irrigation has been practiced, the crop may be sown prior to the first rainfall, and the chances for a heavy growth to plow under in the spring thus increased.

Fall Pruning

The general practice is to prune fruit trees of all kinds either in the early spring before active growth begins or in the summer. There is an old saying that is worthy of repetition here: "The time to prune an orchard is when the tools are sharp." There can be no harm in pruning trees during the fall, at least if the pruner does not remove large branches (in which case their removal should take place during the season of active growth so that healing will follow more quickly).

Pruning should be done annually, with the idea always in mind of removing, before it has attained a size when cutting would leave bad wounds and endanger the life of the tree, all growth that eventually will "interfere." The fall months constitute a much more convenient time for many to prune than the spring. Those who can find an opportunity to do the work immediately following the harvest season, and who find difficulty in getting time to prune in the spring, need not hesitate from fear of injuring the trees, for no injury will result from the practice.

Fall Spraying

It is very hard for the average orchardist to reconcile himself to spraying in the fall. True, it is not always necessary, but in the case of most deciduous fruits it cannot be neglected without serious consequences. What are some of the things that fall spraying will control that cannot be controlled by a spring application?

The peach grower is frequently troubled with the peach blight. In order that this disease may effectively be controlled, both a fall and a spring application of a good fungicidal spray are necessary. The two sprays commonly used (either of which will bring results) are lime-sulphur and Bordeaux mixture, used at full "dormant strength." While many growers prefer the Bordeaux mixture for this fall application, the lime-sulphur possesses insecticidal as well as fungicidal qualities and for that reason may serve more purposes than one.

For example, nearly every peach grower is more of less troubled with the twig-borer or peach worm, a little insect, the adult of which is a moth, that bores into the tender twigs in the early spring and later into the fruit, in a manner suggestive of coddling moth injury to the apple.

While the spring treatment for this pest is preferable, there is no doubt of the value of lime-sulphur in the fall. Bordeaux mixture would have no effect upon this pest. Again there may be scale insects which the Bordeaux mixture will not control and which the lime-sulphur would effectively combat. On the other hand, brown mite and curl-leaf disease of the peach succumb more surely to a spring treatment, and it is, therefore, satisfactory for peach growers to spray with Bordeaux mixture in the fall because of peach blight, and with lime-sulphur in the spring for the control of various insect, mite and fungous troubles.

The Scale Insects

All stone fruits are subject to the attack of scale insects, most common of which, in California, are the "black scale" and the brown apricot scale. The former pest is also fond of the olive. Spraying in the fall with crude oil emulsion or some other form of miscible oil is the only remedy. When either of these pests occur in the orchard, spraying should be done as early as practicable after the foliage has dropped. December is, perhaps, the best month, although rains may seriously interfere with spraying at this time. It is, therefore, wise for the grower to seize upon the first opportunity that is presented in the fall after the trees have become dormant, to do this work.

The reason for fall rather than spring treatment lies in the fact that these species of scales grow quite rapidly during the winter and early spring months, and soon becomes so large that they are resistant to the effects of an ordinary spray which readily kills the immature forms.

Spraying must always be done with thoroughness. Black scale and brown

(Continued on Page 41.)

A Look Ahead

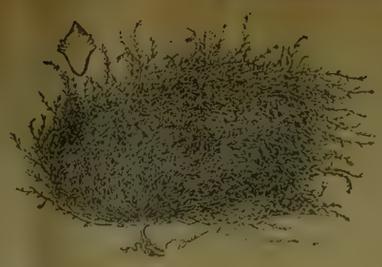
This is the scene visualized by the far-sighted fruit-grower who plants a cover crop now. This pear orchard, at blooming time, shows the result of careful methods, and will be further enriched by the green manure afforded by the fall-sown vetch, illustrated. A cover crop is one form of crop insurance for the orchardist.

The Truth About "Australian Saltbush"

LAST month were described in Orchard and Farm a number of forage plants which have been the subjects of experiments by seedsmen and livestock raisers. Orchard and Farm will follow up closely this important subject and will be interested in hearing about the experiences of subscribers.

One of the most interesting older immigrants is the Australian saltbush, which was introduced into the United States about 25 years ago and distributed throughout the West. Except in this State and Arizona, the plantings proved a failure, although a few Oregon and Washington stockmen have since developed small areas. However, the plant became naturalized in the coastal region south of San Francisco, in the irrigated districts of Imperial Valley, and in the vicinity of Tulare and Bakersfield. It is also found in sections of Arizona. The northern limit for natural growth of this plant seems to be Hollister, about 100 miles south of San Francisco.

The coast belt, which is particularly favorable for its growth, extends from Santa Barbara to San Diego. It has been grown at Alpine, at an altitude of 1800 feet, and near Ramona, at an altitude of 1800 feet. Isolated patches are found elsewhere; however, it seems best suited to the limited area above described.



Napier Fodder

Or Elephant Grass, showing remarkable growth. Above, field two weeks after planting. Below, same field 30 days later. Watch for another article on forage plants next month.

Description of Plant

The true Australian saltbush should not be confused with the "rosy" saltbush, which is an annual and resembles the tumbleweed. Australian saltbush is a semi-woody plant, forming a dense mass 6 to 12 inches thick. The interesting feature about saltbush is that it demands a certain amount of alkali in the soil upon which it is grown. It will thrive in soils upon which very few ordinary plants will grow. The salt content of samples analyzed has run as high as 2.61 per cent—hence its name.

The feeding value of saltbush must be estimated on the basis of its content of sodium chloride (salt), which affects palatability, but the accompanying analysis, from a bulletin of the U. S. D. A., shows that it possesses favorable properties in comparison with alfalfa.

It is considered valuable for pasture purposes and of little worth for hay. It is eaten readily by sheep, goats, cattle and horses when other feeds are scarce; in fact, it is considered in some localities a "life saver," because it is avoided early in the season and remains green after more palatable feeds have been cleaned up. It should be fed in conjunction with other forage, because of its high salt content. However, animals having free access to it will get along very well without other salt, experienced stockmen declare.

In regard to seeding and culture of the crop, Roland McKee, who has recently made an investigation in this State for the Office of Forage-Crop Investigations, gives the following recommendations:

There is but little information regarding the best practice in seeding the Australian saltbush on pasture and range lands. However, in view of the fact that under natural conditions the seed ripens in the fall and drops to the ground soon afterward, it would seem that fall seeding may well be practiced. It is possible that spring seeding may give good results under conditions where weeds or competing plants are not abundant, but where winter-growing annuals have already made a good growth and summer annuals are beginning growth it is not likely that this saltbush will have much chance to establish itself.

The only thing that can be done economically is to scatter the seed broadcast in favorable locations and allow it to take care of itself. If it will not grow and reseed itself under such conditions it can not be used profitably for range purposes.

Seeding Under Cultivation

In growing the Australian saltbush under cultivation the best time for seeding is in the spring, about the time that corn ordinarily would be planted. The land should be well prepared, as for any other small-seeded crop, by plowing and subsequent harrowings. Care should be taken to cover the seed very shallow. Seed planted deep will not germinate, and for this reason it is necessary to have good moisture conditions at the surface, so that shallow-planted seed will receive enough moisture to insure germination. The planting should be made in rows about 3½ feet apart, and cultivation should be given as for any ordinary field crop planted in rows.

The Australian saltbush makes a fair soiling crop, and for this purpose it can be cut at any time after the plants have made sufficient growth to warrant handling. The plants remain green and hold their leaves late in the season, and consequently it can be used in the fall as well as early. The saltbush handled in this way is eaten quite readily by stock, but for the best results it should be fed with other forage and, if possible, supplemented with grain feed.

On account of the plants being very prostrate they can not be cut with an ordinary mowing machine unless some device is attached for lifting the stems. However, it is probable that one would want to feed saltbush in this way only in very limited quantities or for very short periods, and under such conditions it could be cut with an ordinary scythe.

Harvesting for Seed

The seed of the Australian saltbush drops from the plant very readily as soon as it is ripe, and for this reason it can not be cut and handled for seed like most other crops. The best method of procedure in harvesting the seed is to place a piece of canvas about 6 by 8 feet in dimensions under the plants and then knock the seed off with a stick or flail. This method is somewhat slow, but there seems to be no easier way of harvesting this seed. After the seed has been knocked from the plants it should be spread on a large canvas to dry. On account of the moisture contained in the pulpy bracts inclosing the seed it can not be put immediately in sacks or in large piles without heating. After it has been dried it can be sacked and stored like any other seed. The seed of this saltbush ripens in the latter part of August and through September. It does not ripen all at once, so that one must determine when a maximum of seed is ready to harvest. Under favorable conditions about 300 pounds of seed can be secured from an acre.

ANALYSIS OF AUSTRALIAN SALTBUSH

Material.	Constituents (per cent).					
	Moisture	Ash.	Crude protein.	Crude fiber.	Nitrogen-free extract.	Crude fat.
Green stems and leaves:						
Australian saltbush	78.03	4.58	2.75	3.75	10.41	0.48
Alfalfa	75.04	1.80	4.91	6.34	11.09	.86
Hay samples:						
Australian saltbush	7.05	19.37	11.64	15.53	44.06	2.01
Alfalfa	10.95	6.43	17.60	25.83	33.21	3.78

112 HENS 1800 EGGS

Mrs. Harper Writes: "I wouldn't be without 'TWO for ONE' for the world; my 112 hens laid 1800 eggs in 1 month."

Poultry raisers who have not given some thought to increasing their egg production this fall and winter are making a big mistake. Present indications are the price of eggs will be sky high, and if the owners of laying hens do not make every effort to profit by these conditions they will regret it later, particularly when they hear of the large profits being made by their next door neighbor. If there ever was a time when a little extra attention should be given to the poultry yard, now is the time. Do not delay. A few pennies spent wisely today will bring you back dollars tomorrow.

World's Greatest Egg Producer

"TWO for ONE" is the marvel of all egg tonics. It is the most remarkable producer of eggs ever known to the poultry world. **"TWO for ONE"** is making records every day in egg production that were never before believed possible. Flock owners all over the country are amazed with the results. The most experienced poultry experts say they have never seen the like of it.

"TWO for ONE" is not a mere food. It is an egg tonic in the truest sense of the term—a scientific preparation in concentrated tablet form—the result of scientific research and experiment. Every factor entering into the matter of egg production was scientifically studied.

As a result you have in **"TWO for ONE"** a tonic that conditions the hen for the utmost in laying capacity—that builds muscle and bone—that stimulates active functioning of the hen's reproductive organs—that insures fertile eggs and 100% hatchings—that makes the laggard lay and increases the production of active layers. A tonic that gets more eggs for you, winter and summer, than you ever thought possible.

Read These Endorsements

112 Hens—3241 Eggs
Since giving "TWO for ONE" to my hens I get 3241 eggs from 112 hens in one month. My neighbors are jealous.—Clara Tobias, Ohio.

Laid Eggs in the Coldest Weather
I used your egg tonic for the first time this winter and was truly surprised at the way my hens laid. In the coldest weather I was getting eggs every day.—Laura Rigley, Michigan.

11 Hens—192 Eggs—One Month
I gave one box of your "TWO for ONE" tonic to my hens and I got wonderful results. 11 hens laid 192 eggs in less than one month.—S. L. Chase, Kansas.

Tripled His Egg Supply
Please send me two more large boxes of "TWO for ONE" at once. One for my brother and one for a cousin. I told them how the tonic tripled my egg supply and they are anxious to try it. Enclosed find $4.00.—J. P. Roberts, Missouri.

$5000 Egg-Laying Contest

Have you entered our $5000.00 egg laying contest? If not, do so right away, it's free to all users of **"TWO for ONE."** You not only increase your egg production but you may win one of the big cash prizes we are giving every month. Write us today for particulars.

Money-Back Guarantee

Don't take our word for it. **"TWO for ONE"** is sold under the distinct guarantee that if you are not entirely satisfied you get your money back. Take advantage of this offer and send for a box of **"TWO for ONE"** today.

Only $1.00 a box, or $2.00 for large box containing as much as three $1.00 boxes—enough for an entire season. This costs you 1-15 of a cent a day per hen, or less than 1c a dozen for the additional eggs you will receive from your flock.

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Gentlemen:—I want to increase the egg-laying ability of my hens, make more money out of my chickens and take advantage of the high prices that will be paid during the coming fall and winter. So please find enclosed $..... for a box of "TWO for ONE" as checked below.

(Check opposite size wanted:)
Small Size (Including War Tax) $1.00
Large Size (Including War Tax) $2.00

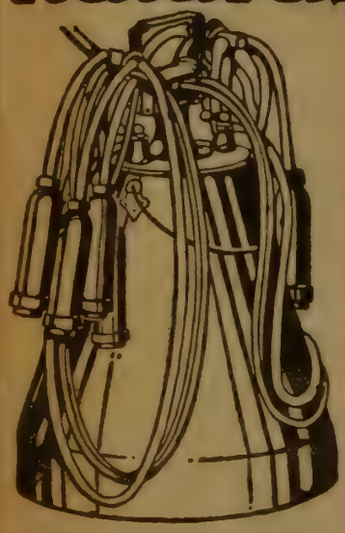
This order entitles me to an entry in your $5,000.00 egg-laying contest, of which you are to send me full particulars, and my money is to be returned if I am not entirely satisfied with the tonic.

Name .....

Address .....

.....

Universal natural milker



Right now good dairy help is hard to get and wages are mighty high. Why stick to the old-fashioned, laborious, time-wasting hand milking method while other dairymen are saving time and making bigger profits by using the Modern Universal Natural Milker?

One Universal lasts a lifetime. It alternates, milking two teats at a time, while it is massaging and relieving the other two.

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Learn about this simple, dependable, mechanical milker that enable one man to do the work of three, and do it better.

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PURE HAWAIIAN CANE MOLASSES

PORK PRODUCTION

By actual test will increase pork production five-tenths pounds daily over a barley and tankage feed, yet it sells for less than half the price.

MILK PRODUCTION

One of our customers writes:

"We are out of molasses and our cows are falling off in their milk badly, hence we would appreciate immediate shipment. Kindly ship us two tons more in addition."

We supply it in barrels or tank cars for shipment anywhere.

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BUY NOW—TREES ARE SCARCE

When you plant fruit trees, plant the best—trees that will grow, and produce, and pay! We make it a practice to bud our fruit trees from parent stock of proven productiveness and quality. The scions are carefully selected by trained experts and the budding is done in the most skillful and scientific way.

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76 South Market St., San Jose, California.

Feeding Animals Scientifically

It is the purpose of this article to explain in simple words the meaning of the various terms used in analysis of feedstuffs. Every agriculturist should be thoroughly familiar with the information given here. The new feed law requires the publication of accurate analyses of all commercial feedstuffs. Are you prepared to interpret intelligently the information thus placed at your disposal? If not, we feel sure you will find this article particularly valuable. It was prepared especially for Orchard and Farm, through the courtesy of W. H. Young of San Francisco, by an expert agricultural chemist.

By Arthur Price

THE materials of the animal body are constantly breaking down and being consumed, and to keep the animal in a healthy and vigorous condition there must be a constant supply of new material. If this is lacking or insufficient, hunger and finally death result.

To keep up this supply is one of the chief functions of food, but in addition to this the food maintains the heat of the body and at the same time furnishes the force of energy which enables the animal to move the muscles and do work, and also to perform the necessary functions of the body.

In furnishing heat and energy, the food may be said to serve as a fuel. If, in addition to repairing the wastes of the system and furnishing it with heat and energy, the food must maintain development and growth or bring about secretion of milk, an additional supply is required.

Supplying food in the right proportion to meet the various requirements of the animal, without a waste of food nutrients, constitutes scientific feeding. It is by careful study of the composition of feeding stuffs, the proportion in which they are digested by different animals under different conditions, and the requirements of animals for the various food nutrients when at rest, at work, giving milk or producing wool, mutton, beef and pork that the principles of feeding have been worked out.

Composition of Feeding Stuffs

The food of herbivorous animals (or those not eating meat) contains the same four groups of substances that are found in the body; i. e., water, ash, fat and protein, and, in addition, a class of materials called carbohydrates.

WATER—However dry a feeding stuff may appear to be, it always contains a considerable amount of water which can be driven out by heating. The amount may be only from 8 to 15 pounds per 100 pounds of material, as in the case of hay, straw or grain, but in green corn fodder and silage it amounts to nearly 80 pounds, and in some roots to 90 pounds per 100. This water, although it may add to the palatability of a food, is of no more benefit to the animal than water which it drinks.

The buyer is interested in the water content of a feed, not only because of its partial indication of the feeding value, but also because the keeping qualities may be affected.

Fresh slices of beetroot, containing 93 per cent water, or green fodders containing 60 to 90 per cent, are valuable in seasons when pasture or soiling crops are unavailable because of the succulence imparted by the water content. However, as we all know, they will not keep like oil-cakes and oil-cake meals which contain the lowest percentage of water, 9 to 13 per cent. Nor is their value high for fattening and maintenance purposes.

ASH—This is what is left when the combustible part of a feeding stuff is burned away. It consists chiefly of lime, magnesia, potash, soda, iron, chlorine, and corbanic, sulphuric and phosphoric acids, and is used largely in making bones. From ash constituents of the food the digestive organs of the animal select those which the animal needs and the rest is voided in the manure. As a general rule, rations composed of a variety of nutritious foods contain sufficient ash to supply the requirements of the body. Corn, however, is poor in ash, and when fed extensively to growing animals, like pigs, may necessitate the addition to the ration of some ash material, such as wood-ashes, charcoal, coal or bone-meal.

The quantity of mineral substances found in fodder plants depends not only upon the kind and size of the plant, but also upon the soil, manure and weather conditions. As a rule a rich soil, or the application of plenty of mineral manure, raises the ash content of the plant. Periods of drought decrease the amount of mineral substances in the plant, particularly as regards lime and phosphoric acid.

The elements found in the mineral matter are present in one or two forms: Either in inorganic form, in combinations of two or more of the elements, as sulphates, phosphates, nitrates, chlorides or silicates, combined with bases, as potasium, sodium, calcium, magnesium and iron; or in organic form, as constituents of organic compounds. Especially in the case of seeds of plants the ash materials are present largely as constituents of organic compounds.

FAT—Fats and oils are compounds of glycerin with various fatty acids. In order to determine the quantity of fat in a feeding stuff, a finely ground sample is extracted with some solvent that will dissolve the fat. Ether is the usual solvent. The material which, in analysis, is dissolved by the ether, includes in addition to real fats, such materials as wax and the green coloring matter of the plants (chlorophyl). The fat in a food is either stored up in the body as fat or is burned to produce energy. Fat produces more energy and heat than carbohydrates. A certain amount is valuable; more is required in cold climates; too much, however, tends to reduce appetite; overfeeding of oils is, therefore, to be avoided.

Oily seeds and waste animal products, such as greaves and tallow refuse, are among the foodstuffs containing the most fat. Then come the oil-cakes, oil-cake meals, brewers' grains and other by-products from distilleries, flour mills and starch factories. The cereal grains, such as oats and maize, and the leguminous seeds, such as soya beans or lupines, take the next place, while roots, tubers, hay and straw are among the lowest in fat content.

CARBOHYDRATES—Usually divided into two groups: (1) Nitrogen-free extract, including starch, sugar, gums, and the like; and (2) Cellulose or Fiber, the essential constituent of the walls of vegetable cells. Cotton fiber and wood pulp are nearly pure cellulose. Coarse fodders, like hay and straw, contain a large proportion of fiber, while most grains contain little fiber, but are rich in starch and sugar.

The carbohydrates form the largest part of all vegetable foods. They are not permanently stored up as such in the animal body, but are either stored up as fat or burned in the system to produce heat and energy. They

are one of the principal sources of animal fat and are therefore of paramount importance in selecting a fattening feed.

PROTEIN (or nitrogenous materials)—A group of materials containing nitrogen. All other constituents of the feeding stuffs—the ash, fat and carbohydrates—are nonnitrogenous or free from nitrogen. Protein materials are often designated as "flesh formers," because they furnish the materials for the lean flesh; but they also enter largely into the composition of blood, skin, muscles, tendons, nerves, hair, horns, wool and the casein and albumen of milk. For the formation of these materials protein is indispensable.

No substances free from nitrogen can be worked over into protein or will take the place of protein. It is absolutely necessary for an animal to be provided with a certain amount of protein in order to grow or maintain existence. Under certain conditions protein may be a source of fat in the body; and it may be burned, like the carbohydrates and fat, yielding heat and energy. It is of the greatest importance in the ration of the young, or growing animal, or in a case where it is necessary to sustain life or "maintain" an animal. A case in point is the feeding of oil-cake (containing 35 to 45 per cent protein) to starving cattle on drouth-affected ranges, where they can be maintained on a surprisingly small amount of feed, even while becoming more or less emaciated.

To a certain extent the nutrients may replace one another, but no other nutrient can take the place of protein for building tissue and repairing waste of nitrogenous materials in the body.

How Constituents Determined

The composition of feeding stuffs, or the proportion in which the nutriants occur, is determined by chemical analysis. A large number of such analyses have been made, and very complete tables can be found in standard works on the subject, such as "Productive Feeding of Farm Animals," by Dr. F. W. Woll, published by Lippincott, and "Feeds and Feeding," by Henry and Morrison, published by the authors, Madison, Wis. Such tables are too long to be printed in connection with a general survey of the subject, such as this, but every stockman should own one or more such books for ready-reference.

The tables show how great are the differences in composition between different kinds of feeding stuffs. Take the case of protein, for instance; in straw the composition varies from 3 to 4 per cent; in hay of grasses, from 6 to 8 per cent; in hay of clovers and cowpeas, from 12 to 16 per cent; in grains, from 10 to 12½ per cent, and in certain by-products it reaches a much higher figure, as in linseed meal, 35 per cent; cottonseed meal, 42 per cent; peanut meal, 47½ per cent. Such feeds are usually sold on the basis of protein content.

How to Use Books

While the tables give the total amounts of nutrients found by analysis in different feeding stuffs, only a portion of these amounts is of direct use to the animal; i. e., only part is digested. A part of the food is dissolved and otherwise altered by the juices of the mouth, stomach and intestines, absorbed from the alimentary canal, and in the form of "chyle" passes into the blood and finally serves to nourish and sustain the body. This portion is said to be digested and assimilated, and from it alone the animal is nourished. The other portion, the part not digested, passes on through the body and is excreted as manure.

To simplify matters for the feeder, calculations have been made of the amounts of digestible protein, fat and carbohydrates contained in 100 pounds each of a large number of more commonly used feeding stuffs, and these tables are published in the standard publications on feeding.

One of the primary functions of the food is to produce heat for the body and energy for work, the value of the food for this purpose being measured in "heat units" or "calories," and calculated from the nutrients digested. Thus the fuel value of 1 pound of digestible fat is estimated to be 4220 calories, and of 1 pound of digestible protein or carbohydrates about 1860 calories. The total fuel value of a feeding stuff is found by using these factors.

Important Considerations

In determining how much of these materials an animal requires, and in what proportion they are required, it is necessary to know the purpose for which the animal is kept; whether it is growing, being fattened, being used for work, or making milk.

An ox standing in the stall requires less food nutrients than one which is worked hard every day. That is, in drawing heavy loads the animal breaks down or consumes a certain amount of muscular tissue, which must be replaced by protein in the food, and it uses energy or force which is also furnished by the food nutrients. In standing in the barn it still requires some protein, fat and carbohydrates to perform the necessary functions of the body, to maintain heat in winter, to grow a new coat of hair, etc. But if it is fed the same ration as when working hard the tendency is to accumulate fat or waste the food. The importance of scientific feeding is therefore readily appreciated.

Lessons for Dairymen

The cow requires not only materials for maintenance, but also must have protein, fat and carbohydrates from which to make milk. The milk contains water, fat, protein, sugar and ash, and these are all taken from the constituents of the food. If insufficient protein, fat and carbohydrates are contained in the food given her, the cow supplies this deficiency for a time by drawing on her own body, but gradually begins to shrink in quantity or quality of milk, or both.

The stingy feeder, therefore, cheats himself as well as the cow. She may suffer from hunger, although her stomachs are full of swale hay, but she also becomes poor and does not yield the milk and butter she should. The milk glands are a wonderful machine, but she cannot make milk casein (curd) out of the constituents contained in coarse, unappetizing, indigestible swale hay or sawdust any more than the farmer can make butter from skim milk.

The cow not only must have a generous supply of good food, but also food containing sufficient amounts of

(Continued on Page 35)

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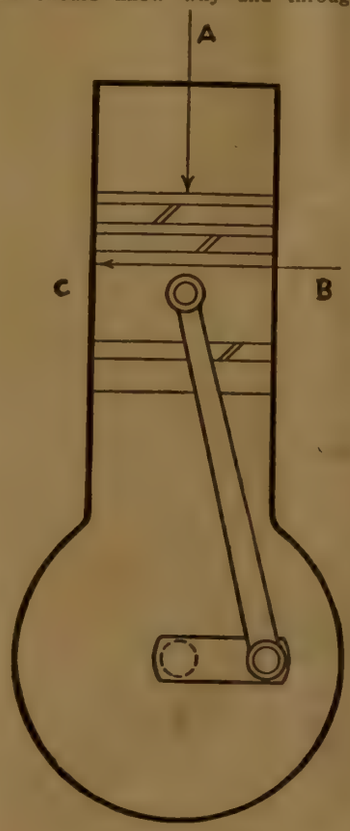
TRACTOR TROUBLES.

Their Prevention and Cure

by W. W. Rainey.

IN THIS fast age of gasoline when the farmer must constantly deal with motor power, it is most essential that he become thoroughly familiar with the inner workings of gasoline motors. In addition to having a knowledge of how to repair different parts as they wear or break, he should know why and through



No. 1.

what natural phenomena this wear takes place.

We all know that after a motor has been in use two or three seasons, the pistons and cylinders may become so worn that new pistons are necessary. Then when the cylinders are opened up they are found to be worn so much "out of round" that new pistons and rings will not be of much avail; in such a case it may be necessary to rebore the cylinders and to put in over-sized pistons and rings. Why do cylinders wear out of round? I have often had this question asked me, even by men who have operated tractors for several years.

The Reason Why

It is a well-known fact that any cylinder which is worn much, is worn out of round. In the case of tractors using a horizontal motor, this is usually attributed to the weight of the piston wearing on the bottom of the cylinder. But this is not true.

Upon reference to cut No. 1, the reason for this wear becomes very apparent. The line of force of the explosion (represented by the arrow A) pushes the piston straight out of the cylinder. As the crank or connecting rod, swings out from dead center into the position illustrated, the connecting rod takes a decided angularity. Therefore, the thrust out against the side of the cylinder, at C, increases as the angularity of the connecting rod increases. If the cylinder is placed in a horizontal position (Illustration No. 2) it is plain that the pressure all comes on the bottom of the cylinder.

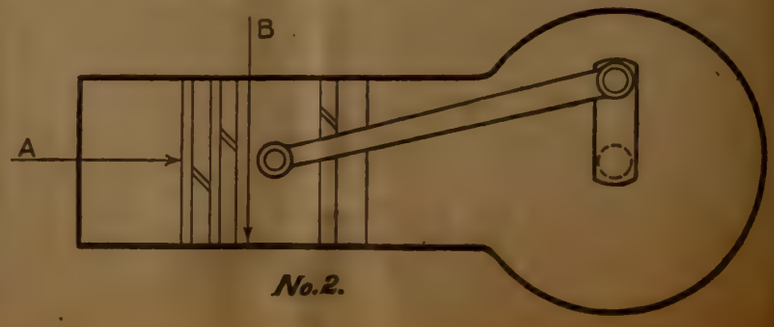
In a six-inch motor, the force on the piston at the time of the explosion is approximately 6000 pounds. If the crank were in a straight line with the bore of the cylinder, there would be no pressure brought to bear upon the walls of the cylinders; but, as the crank moves around, the thrust on the side of the cylinder-wall will increase, in exact proportion to the angularity of the connecting rod. If this connecting rod should reach an angle of 45 degrees, there would be 3000 pounds of thrust on the cylinder wall. Under normal conditions, however, this thrust amounts to from 1000 to 1500 pounds. The weight of the piston is, approximately, but six pounds. Thus, it may readily be seen, that the weight of the piston has practically nothing to do with the wear on the cylinder, even in a horizontal-type of motor.

Now, in Illustration No. 3 (See page 14) we have the cylinder in a horizontal position, with the motor running under instead of over, as in the front cylinders of an opposed, or double-opposed motor. In this case it will be noted that due to the angularity of the connecting rod, the piston is forced against the top of the cylinder instead of the bottom, during explosion stroke, and thus the weight of the connecting rod and piston can be deducted from the thrust of the piston due to the angularity of the connecting rod. In this case, therefore, it would be beneficial instead of detrimental. This explains why the two front cylinders of a horizontal motor are frequently worn out of round at the top of the cylinders while the two rear cylinders are worn out of round on the bottom.

The Crank Pin Bearing

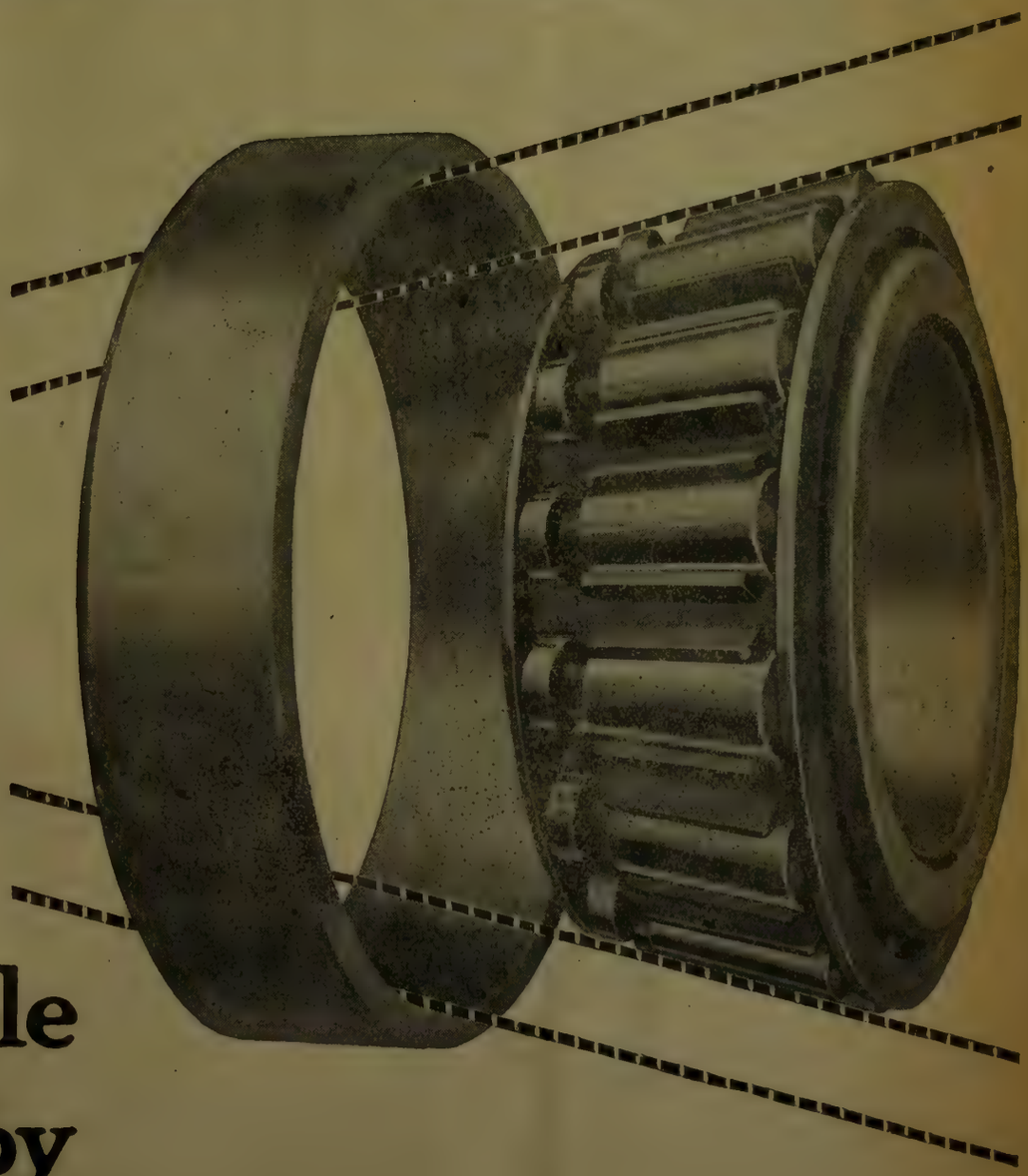
It is a well-known fact that the crank pin for mechanical reasons is the smallest bearing in a motor. It

(Continued on Page 14.)



No. 2.

TIMKEN TAPER



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to town on your back and yet you unnecessarily break your back doing a lot of odd chores around the farm such as sawing wood, turning the grindstone, pumping water for the livestock, etc., and let your wife and girls wear themselves out over the wash-tub, churn, and separator. Drudgery of this sort was absolutely necessary on the farm once upon a time—but times have changed.

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The 1½ and 3-h. p. engines are the all-around "chore boys" while the 6-h. p. engine is the dependable "man about the farm". It does work that a dozen hired men couldn't do, such as shelling corn at the rate of from 1,000 to 1,500 bushels a day, baling 15 to 20 tons of hay in a day, grinding feed at the rate of from 5 to 25 bushels an hour, and threshing 20 to 40 bushels of wheat an hour (operating a Sterling thresher).

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—Cartoon, Courtesy International Harvester Co

Tractor Troubles—Rainey

(Continued From Page 12.)

also does the most work. It takes the same thrust as the main bearings, and they are larger. Moreover, there are a number of them to absorb the force of the explosion against the piston. The crank-pin also is subjected to a centrifugal force, due to the weight of the connecting rod, which causes wear. In a horizontal motor the weight of the connecting rod and piston is carried on the cylinder wall, which has a bearing exceeding by 20 times, the area of the crank-pin bearing. In that type of motor, therefore, the weight is not placed on the pin, already overloaded.

After studying the foregoing, the reader can see why all pistons wear the cylinders "out of round," whether in a vertical, horizontal or V-shaped motor. This is a difficulty which is bound to arise and must be anticipated and intelligently dealt with.

The Removable Cylinder Sleeves

In some of the tractors of today we find the cylinder walls cast separately from the jacket. When the walls of such a motor are worn out of round enough to affect the power of the engine they can very quickly be replaced with new ones, or if the sleeves are taken out and turned, so as to bring the wear in another place, it is possible to run the motor several years without reboring. This removable cylinder wall also makes it possible to replace the cylinder in an old motor, making it as good as a new one at a very small cost.

Fitting Piston Rings

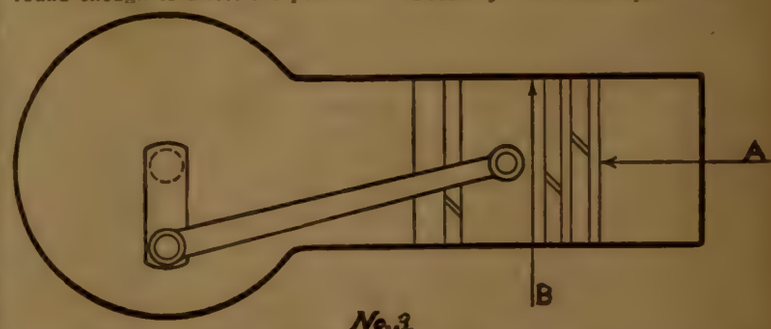
As the proper working of a motor depends entirely on a perfect compression of the charge, it is obvious that the pistons and rings must be in the best of condition if the operator is to get the most power and economy out of the motor. The valves and their seats may be perfect, and yet the motor will lose considerable of its compression if there is leakage through piston and rings.

Furthermore, the piston and rings cannot make a tight joint against the cylinder walls without good lubrication. Again, the rings should fit the grooves in the pistons accurately, and the ring should make a tight joint against the side of the groove of the piston, as well as against the cylinder wall; otherwise the air would get under the ring and come out on the other side. It sometimes happens that carbon forms under the rings and causes them to stick in their grooves. When this occurs, they must be taken out and the carbon scraped off clean with a sharp tool

Removing Rings

In removing rings from the pistons, great care should be exercised to not spring them in any direction. The best way to remove rings is to use a heavy-bladed knife or a thin-blade screw-driver. Pry the end of the ring out enough to slip a thin strip of tin, or an old hack-saw blade under it; then run the knife around and continue to slip in pieces of tin until four or five are used, one under each end of the ring, so that the ends will not catch in the groove. Then the ring can be slipped up over these strips of tin without being sprung Rings should always be put back on a piston in the same groove, and the same side up as when removed.

After the rings are removed, the discovery of a black spot on one of them indicates that it is not true; therefore, it does not touch the cylinder wall at that point—and leaks. It should be replaced with a new one. Whenever rings do not have a good tension against the cylinder wall they will not hold the compression.



No. 3.

Fitting New Rings

In fitting new rings one must leave enough clearance between the ends of the rings to allow for expansion of the metal when the rings become hot. Fit the rings, separately, in the cylinder in which you intend to use them, and file the ends down enough to allow a clearance between ends of about .001 of an inch for each inch of diameter. If your motor has a six-inch bore, leave from .006 to .008 of an inch clearance between the ends of your rings. This is absolutely necessary, as the ring will become longer when it grows hot, and if this clearance were not allowed, would score the cylinder wall, ruining both the wall and the ring.

A ring that has not sufficient tension will cause a motor to use too much oil and also to lose power.

"Powerful" Quotations

By W. H. Gardner

THE horse has seen his best day. Gone is the rubber-tired buggy, the jogging nag and his one-handed driver. The tractor, the truck and the automobile not only have replaced the horse on the city street, on the country roads and on the farm but are now even replacing it in poetry and in the classics. The following revised quotations are offered to all orators, poets, after-dinner speakers and spellbinders:

"Don't set the plow before the tractor."—HEYWOOD.

"He will hold thee, when his passion shall have spent its force,
Something better than his dog, a little dearer than his tractor."
—TENNYSON.

"No man ought to look a given tractor in the transmission."
—HEYWOOD.

"A little neglect may breed mischief: for the want of a bolt the tread shoe was lost; for the want of a shoe the tractor was lost; for the want of a tractor the rider was lost."
—POOR RICHARD'S ALMANAC.

"A tractor, a tractor! My kingdom for a tractor!"
—SHAKESPEARE.

"The tractor will pull its load, but not a double load: ride not a free tractor to death."—CERVANTES.

"A small tractor is soon greased."
—HEYWOOD.

"He doth nothing but talk of his tractor."—SHAKESPEARE. (Merchant of Venice.)

"It is not best to swap tractors while crossing the stream."—LINCOLN.

"Set a beggar on a tractor; he will ride at a gallop."—BURTON.

"Step on the throttle, step on it strong
And drive your tractor faster;
It does not know as it scrambles along
That it has a fool for its master."
—OLIVER WENDELL HOLMES.

The Garden Tractor

Is one of the most interesting developments of the motor era. Several successful makes are now on the market. That the garden machine is not essentially a "walking tractor" is here demonstrated. The sulkey attachment for the Beeman, which makes it possible for the operator to ride in comfort, was shown at the Los Angeles tractor demonstration.

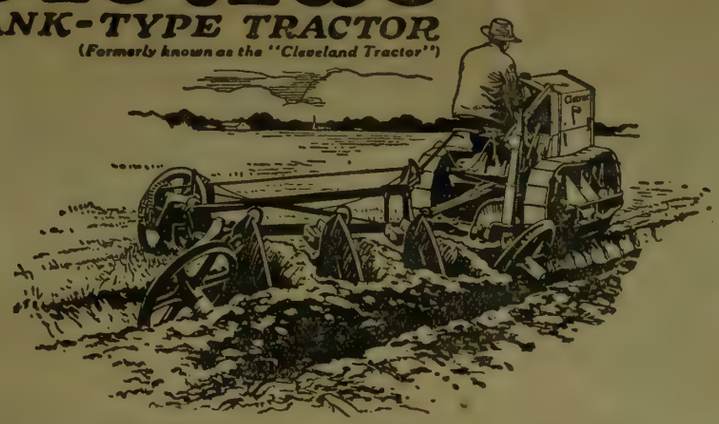
What Kind of Oil?

Should the tractor operator use high-grade oil or is it satisfactory to use inexpensive oil and drain the crank-case more frequently? There is considerable difference of opinion on this subject, but whichever opinion is accepted, certain it is that the oil in a tractor must be drained much oftener than that used in an automobile engine. Neglect of this one vital principle has ruined or prematurely aged many tractor engines.

Cletrac

TANK-TYPE TRACTOR

(Formerly known as the "Cleveland Tractor")



No "Off Season" for the Cletrac

THERE is no "off season" for the Cletrac. It is a year 'round investment paying you a steady interest.

When not necessary in the fields use it to do the *other* work that you formerly did with horses or the stationary engine. The Cletrac is a master at belt work and knows no equal at dragging dead weight.

It is ideal for orchard work and because of its small size, its short turning radius and its power, has become the *standard tractor* among orchardists.

The Cletrac runs on metal tracks like a locomotive. No extra power is required to push it *through* the soil. It runs on its tracks *on top of the ground* and consequently most of the power goes into drawbar pull where it belongs.

The Cletrac operates on a very small amount of kerosene. It does *more* work *more* days in the year and does it *better, cheaper* and *faster.*

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The Chico Convention

The fifty-second convention of California fruit growers and farmers will be held at Chico, November 10 to 15, inclusive. The United States Plant Introduction Station, as well as the State Land Settlement Colony will be visited. A very complete, interesting and instructive program is being arranged by Director Hecke of the State Department of Agriculture. Programs and full information may be secured either from his office at Sacramento or from the Chico Chamber of Commerce. The best available experts will address the meetings and it is promised that every agriculturist attending will be more than rewarded for his expenditure of time. It is a convenient season for a little vacation! Why not go?

Coming Soon

We have arranged for the publication of some entertaining fiction in coming issues, including a new short story by Albert Constant Jameson, already well known to our readers.

Have you "checked up" the many valuable, practical hints in this number? It is our ambition to make Orchard and Farm so valuable to you in your business that you will never want to be without it.

In the December issue will be published a complete index for the year 1919. We will also make some interesting announcements about our plans for the coming year. Is your subscription paid well in advance?

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EDITORIAL DEPARTMENT OF ORCHARD AND FARM

~ TIMELY TOPICS AMONG FARM FOLK ~

J. C. Knollin, Editor

The Inventory

"HOW many hogs have you?" inquired the visitor at Sleepy Hollow Farm. The proprietor surveyed in speculative manner the field where his porkers were running and replied: "Oh, I don't know. About seventy-nine or thirty-six, I guess."

Most of us can make a little closer estimate than this of the number of occupants of our piggeries or pastures or poultry-runs. And it is, in fact, well worth while to possess at all times an accurate inventory of the stock on hand, as well as the machinery and other equipment. It is of value in many ways, as for instance, in applying for a loan. At least once a year an inventory should be taken of everything on the ranch.

The logical time for this work is in the winter. January first is a good date on which to open or close a set of farm books. The United States Department of Agriculture, recognizing the convenience of this date, has set January 1, 1920, as the time for taking the national agricultural census.

How would you like to have the job of counting all the cows and horses and hogs and chickens and sheep in the United States? That is exactly what Uncle Sam, through the Department of Agriculture, is preparing to do.

And not only this, but the questions will include information on the acreage and production of all crops, amount sold or to be sold, livestock classification both by sex and age, acreage of woodland, and the amount of land on farms drained and needing drainage. Special consideration also will be given to matters of land tenure, farm mortgages, land utilization, the amount of land and acreage of crops irrigated, numbers of young livestock sold, purchased, slaughtered and lost on the farms, and quantity of dairy products and wool produced.

This is a very valuable work and one that merits the co-operation of every farmer in the country. Fair legislation always must be based upon accurate figures. Good markets depend upon a knowledge of the laws of supply and demand. Therefore, for your own sake, as well as that of all the food producers of the nation, take an inventory of your possessions the first of the year, if not sooner, and co-operate in any way that you can with the Government officials in charge of the census.

CURRENT HUMOR

"Arrest the farmers! Indict them under the anti-trust laws and throw them in jail. Break up the food-producers' combine! They must not be allowed to organize!"—Organized Consumers' League.

Friction Over Agricultural Laws

APPARENTLY there is considerable feeling in different sections of the State over the enforcement of the inspection, standardization and quarantine laws, administered by the State Department of Agriculture.

According to a recent report issued by Director Hecke, Horticultural Commissioner O. C. McManus of Modoc County was murdered when, in the discharge of his duty, he ordered the spraying of infested fruit trees that were deemed a menace to the county.

Director Hecke also calls attention to an alleged unprovoked assault recently made upon the person of District Veterinarian George Gordon of the State Division of Animal Industry who was, it is asserted, attacked by a cattle owner who took exception to the officer's instructions in regard to dipping and handling his stock.

Still another incident is cited; that of the alleged assault with a deadly weapon of A. E. Gray, Field Assistant in Rodent Control, who was engaged in cleaning up an area of land, said to have been infested with squirrels, after the owner had failed to do the work within the prescribed period of time. It is stated that the owner of the land threatened the force of deputies with a rifle and later was arrested and charged with an attempt to assault.

These occurrences are more than regrettable; they are a blot on the fair name of each community involved, no matter who is to blame. Orchard and Farm does not know the incidents leading up to these events; it is entirely possible that personal feeling was allowed to gain the better of good judgment. It is also possible that the officials involved failed to maintain the impartial attitude demanded by the dignity of their position and intentionally or otherwise needlessly offended the property owners.

Nevertheless they had the law on their side, and whether the enraged citizens were needlessly incensed or not, there was no excuse for personal attacks. Our laws may be imperfect, but their provisions include consideration of and redress for any grievance. These incidents represent nothing less than the spirit of mob violence as expressed by individuals.

Thinking, educated agriculturists always take a broad view of a situation and look to the welfare of the majority. Another class is avowedly "looking out for Number One" and regards any regulation, no matter how beneficial to the industry or the community, as interfering with "constitutional rights." We are a free, self-governing people, largely because of impartial administration of laws framed by the representatives of the majority. The same agencies which made the laws can change them, if at any time they do not represent the will of the majority.

The individual who obstructs the administration of the law is frequently of the type taking no interest in civic affairs, making no study of current community problems, and voting only diffidently if at all. If our laws are unfair and crude, let us amend and improve them; if they represent the best constructive work of thoughtful and impartial representatives of the people, let us all stand by them.

But whatever they represent, let us consider the situation in a broad light. Let us think of the welfare of the majority. We can make very uncomfortable by pressure of public opinion the positions of those individuals who jeopardize the good name of the community by physical attacks upon fellow-beings who happen to be wearing the official badge. And if, as occasionally happens, the fault lies with the officer, we should remember that it is always more dignified and productive of results to replace than to assault an incompetent official.

Just Between Ourselves

"WHO'S in there?" cried the farmer, setting down his lantern and pointing the muzzle of his shotgun through the door of the poultry-house. A moment's silence; then from the farthest, darkest corner came a still, small voice: "N-n-nobody but us chickens, Boss."

Presence of mind is a wonderful thing and has saved many a situation. It is largely based upon knowledge of how to do things!

More than 150,000 wideawake, progressive, successful agricultural people will read this issue of Orchard and Farm. If each one of them gains a single helpful suggestion or is amused or interested or inspired, and thus assisted in getting more out of life, we shall feel that our efforts have been worth while.

But thousands of members of this big family will secure ideas and information from this one issue that will be worth to them many times the subscription price. Orchard and Farm is building up an enviable reputation as a magazine that TELLS HOW TO DO THINGS.

"I take five farm papers," writes C. M. Rodrick of Orange, Cal., but Orchard and Farm is the most helpful and interesting of them all."

The same enthusiastic spirit is manifest in scores of letters we have received recently, such as this one from A. P. Brasher, Jr., of Camino: "I wish to say that we enjoy every number of Orchard and Farm; in short, it is brimful of information of untold value."

Naturally we feel mighty pleased to receive such letters as this. They help to explain why our family continues to grow larger and our covers farther apart; and they inspire us to still greater efforts on behalf of our friends.

Sister Republics

THE attention of American farmers is directed to the importance of cultivating South American trade, by John Barrett, Director General of the Pan American Union, the International Organization of the American Republics.

Mr. Barrett, who formerly was United States Minister to Argentina, Panama and Colombia, insists that "Every farmer and every person interested in farming throughout the United States has a vital concern in Pan-American agricultural co-operation." It is entirely wrong, he asserts, to assume that manufacturers, exporters, importers, financiers and shipping men alone are concerned with Pan-American affairs. Although the popular imagination may picture them as more intimately connected with Pan-American co-operation than the farmers, they have in the last analysis no more at stake than those engaged in agriculture.

In support of these contentions he points out that the exchange of material between the United States and Latin America, largely made up of agricultural products, has increased from $450,000,000 fifteen years ago to $1,750,000,000 last year, representing an appreciation of more than 300 per cent! He also reminds us that the Pan-American Union has proved to be an effective "League of Nations," having already served to prevent war and tending always to cement the friendship of our Great Republic with the twenty-one independent republics of the South.

With such resources as they represent to draw upon, we could, if necessary, laugh at the commerce of Europe, even were we not sufficient unto ourselves. True believers in the sanctity of the Monroe doctrine, and real, red-blooded exponents of the idea of America for Americans, can find in the development of these sister republics and their trade, sufficient interest to occupy all of their attention. And surely the situation existing here in our own western hemisphere is important enough to absorb much of the energy of those officials and citizens who seemingly are intent upon dragging us ever more deeply into the affairs of Europe.

ORCHARD and FARM

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J. C. KNOLLIN, Editor. W. TYLER SMITH Manager

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CONCISE CONTRIBUTIONS

On practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling why, when, where, who and how much.

More Cars!

WITH harassed producers of perishable food lying awake nights because of the impossibility of securing sufficient refrigerator cars, and with huge losses narrowly averted if not actually experienced, it is aggravating in the extreme to learn that it is the practice at some of the Eastern terminals to use refrigerator cars for storage houses, and to hold them on the tracks in order to withhold supplies from the city markets for periods of from 5 to 7 days!

Assuming that all markets are subject to this frightful abuse, it may be seen that this stolen time, added to the average period of 20 days required for a round trip, must decrease the availability to shippers of refrigerator cars by at least 25 per cent.

One factor contributing to this deplorable situation is the unwarranted agitation throughout consuming centers over the principle of cold storage. Merely because, in some instances, this process has been subject to abuse, the idea has gained prevalence that all cold storage is a crime and represents restraint of trade.

As a matter of fact, cold storage is more often a blessing than an abuse, and, if properly controlled, actually tends to lower rather than raise the cost of food. That there have been flagrant abuses cannot be denied, and strict supervision should be exercised. But it is unfortunate that public sentiment has been thus falsely aroused, for this strong feeling has largely prevented the enlistment of capital in new storage enterprises, and as a result there is a growing lack of accommodations in the face of greatly increased production of perishable foodstuffs.

This situation may account, in part, for the use of refrigerator cars for storage purposes, but it would seem that with the Bureau of Markets cooperating with the Railroad Administration, and with both of these supported by the Attorney General's office in its campaign against hoarding, something could be done and done quickly!

California producers must not be allowed to suffer for lack of transportation facilities while Chicago or New York commission men wax fat on the profits realized from produce held on the tracks!

In sending in order for renewal of subscription, H. H. Clark, writing from the Calipatria office of the Imperial Valley Farm Lands Company, says: "Any man who wants to keep up with Western farming conditions has no business being without Orchard and Farm."

If you like to keep "a little ahead of the latest"; if you enjoy snap and "pep," and if you appreciate true value received you, too, will understand why this enthusiastic reader did not want to let his subscription to Orchard and Farm expire.

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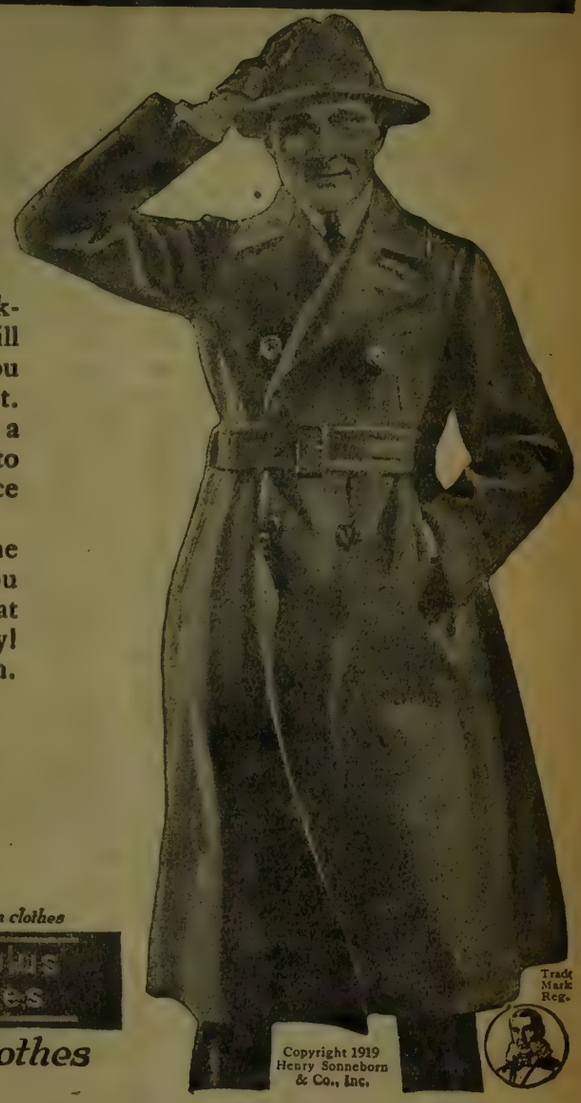

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Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress, of August 24, 1912,

OF

ORCHARD AND FARM

Published Monthly at Los Angeles, California
FOR OCTOBER 1, 1919.

COUNTY OF LOS ANGELES
STATE OF CALIFORNIA, } SS

Before me, a Notary Public in and for the State and County aforesaid, personally appeared W. Tyler Smith, who, having been duly sworn, according to law, deposes and says that he is the Business Manager of the Orchard and Farm and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the name and addresses of the publisher, editor, managing editor and business managers are:

Name of	Postoffice Address.
Publisher, Country Life Pub. Co.	Los Angeles, Cal.
Editor, J. C. Knollin	Los Angeles, Cal.
Managing Editor, J. C. Knollin	Los Angeles, Cal.
Business Manager, W. Tyler Smith	Los Angeles, Cal.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

William R. Hearst, President	New York
M. F. Ilmsen, Vice President and Treasurer	Los Angeles, Cal.
A. T. Sokolow, Secretary	Los Angeles, Cal.

3. That the known bondholders, mortgagees and other security holders, owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities, are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain certain statements embracing affiant's full knowledge and belief as to the circumstances and conditions which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise to paid subscribers during the six months preceding the date shown above is 42,619.

(This information is required from daily publications only.)

(Signed) W. TYLER SMITH, Manager.

Sworn to and subscribed before me this 21st day of March, 1919.

(Seal) H. O. HUNTER, Notary Public.
My Commission expires May 17, 1922

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and the best way to find out how to use it most effectively is to send to the Hercules Powder Co. for the 68 page illustrated book, 'Progressive Cultivation'. This book not only tells of the many things that dynamite can do to help you with your farm work but it gives detailed *directions* for every blasting operation.

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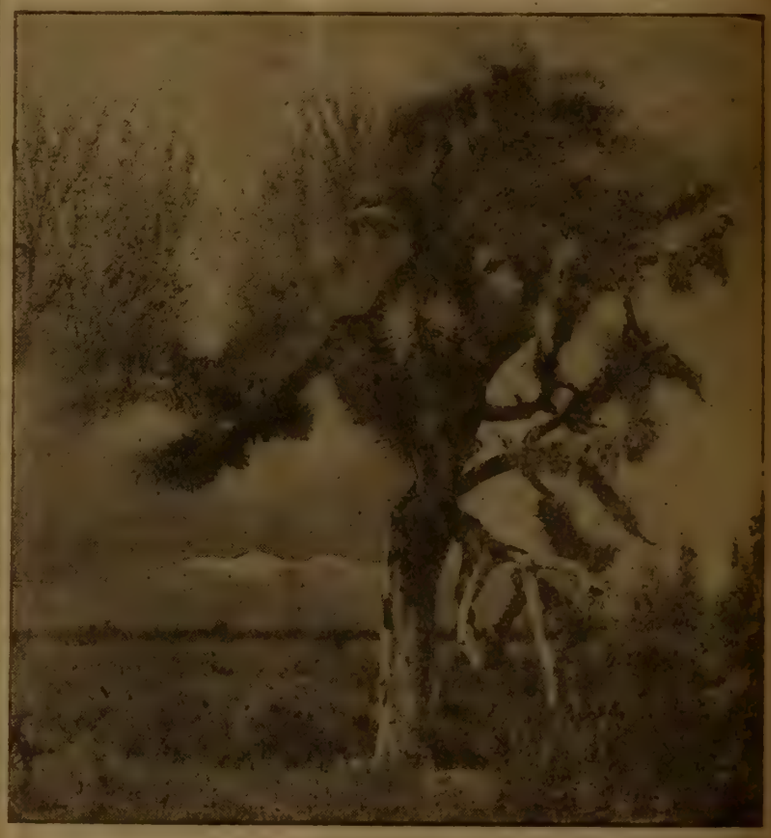
THE VISION—By Jason Wells

THE final camp—upon the desert's edge,
The weary, sweat-stained animals released
From chafing straps. Dry, sun-parched faces raised
In gratitude, caressed by cooling wind.
A tiny blaze to cleave the loneliness
Of silent spaces. Then the hush of night—
The jeweled, desert night. Contentment, rest—
And tired hearts by dreamless slumber blessed.

THE wonder of the dawn. And there was one
Who rose, refreshed to gaze upon a scene
That gripped his senses—held him in its spell.
His toil-bent shoulders straightened and his face
Grew soft and calm, while joyously he breathed
The crystal tonic air, and bared his head;
Then, smiling, raised his knotted hands on high
And stood, thus, gazing long into the sky.



THE caravan astir! Excitement; joy!
A day of grinding toil ahead—but then—
The grassy glades and spreading trees; the song
Of tumbling streams to mark the end of strife.
The cool breath of the ocean—peaceful days,
Achievement, opportunity—and life!
But still he stood, by some strange power enthralled—
His soul possessed—as though a voice had called.

AND as he waited there, the dawn revealed,
In silhouette against the white-robed peaks,
An age-old, sentinel, whose grotesque limbs
Were spread to frame a perfect picture: Trees
In long, straight rows, all laden down with fruit.
And in their midst a cottage, banked with flowers.
Among the blossoms, children at their play,
And silver-throated birds to greet the day.

WHIPS cracked; wheels creaked—and yet he stood apart
Asking naught but to be left alone.
Entreaty nor derision stirred his heart,
And once again the desert claimed its own.

Citrus Pests

(Continued From Page 6.)

for, so far as pest control problems are concerned. While it is certainly true that the control of pests of the citrus fruits has advanced further scientifically, and is carried on with more practical efficiency than that of any other branch of agriculture, no one will claim that there is not still much room for improvement. In fact, almost every day brings out some advancement in the work. The past year has seen, through the improvement of fumigation methods by the perfecting of the use of prussic acid rather than cyanide, the greatest advance since the discovery of the fumigation process.

The work of the Office of Pest Control of the State Department of Agriculture in the control of mealy bugs by the liberation of large numbers of natural enemies in the orchards, as above outlined, also has opened an entirely new field, which is bound to result in great value to the grower of citrus fruits.

Must Be No "Let-Up"

California is a long way distant from her principal markets; capitalization of citrus properties is high; citrus growing is an art which requires the use of considerable expert help and this is costly, and pest control undoubtedly is a large item of expense. All these things tend to bring about a constant increase in the cost of production. Pest control is, however, a basic part of successful citrus culture and there must be no slackening in the efforts of the growers and those whose duty it is to assist them. We must have better control of citrus pests in the future than in the past and more of the profits lost through insect attack must be saved. This does not mean, necessarily, that the cost of pest control will become greater, but rather that greater efficiency must be brought about through improvements in our methods, greater production more than offsetting increased expenditures.

Plum Pollination

EVERY grower of plums and prunes will be interested in the results of the experiments recently concluded by Professor A. H. Hendrickson of the University of California who, for several years, has been studying the pollination of different varieties. The conclusions are published in Bulletin 310, issued by the College of Agriculture, Berkeley, and obtainable free upon application.

The important factor of yield in nearly all cases is materially affected by pollination, and cross-pollination is absolutely essential with many varieties in order to make them bear. Even those which are not self-sterile may frequently be made to yield more heavily by crossing with another variety.

The fact that bees are true friends of the orchardist was again conclusively demonstrated, as in the case of Professor Tuft's experiments with almonds, reported in Orchard and Farm last year. Even self-fertile varieties of plums and prunes were found to be immensely benefited by the presence of large numbers of bees to carry the pollen.

As an example of the value of bees is cited an experience with the Sorosis Orchard at Saratoga. In 1916, with a normal set of 3.2 per cent, the yield on 180 acres was 344 tons of dried prunes. In 1917, after 115 colonies of bees had been introduced, the yield on the same acreage, with an average set of 12.9 per cent, was 432 tons, or an increase of nearly 100 tons of dried fruit.

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ORCHARD AND FARM - - - - - EXAMINER BUILDING, LOS ANGELES

RANGER OIL, 16-16¼c

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40 wells producing—110 wells drilling

We are officially informed that approximately 40 wells, in which the Ranger Company own royalty interests, are now producing, while 110 drilling operations are said to be under way, on properties in which the Ranger Oil Company own royalties. The 40 wells now producing are reported yielding about 40,000 barrels daily, or an average of 1000 barrels each.

INCREASED EARNINGS

The many new wells being brought in would seem to indicate a likelihood of extra or increased dividends, while the present heavy demand for stock seems certain to send prices to decidedly higher market levels. Orders should, in our opinion, be placed promptly.

STOCK MARKET DIGEST No. 71

Issued tomorrow discusses:

Petroleum Output and Development in Oil Fields in the United States.
Investment Condition in California.
Cosden Oil.
Sinclair Consolidated.
Ranger Oil Company.
Trojan Oil Company.
Southern Pacific.
Pan-American Petroleum.
Union Sugar.
Union Oil of California.
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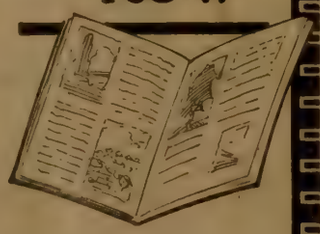
$1,036,336 for Shelled Almonds

The above amount was paid for almonds imported into the United States during April. California fruit growers should plant more almond trees and keep this money at home.

Write to us about best varieties to plant



"From the Roots Up" Is Our Motto

The Fresno Nursery Co.
P. O. Box 615-F, FRESNO, CALIFORNIA

Ask Your Dealer for
EL DORADO
COCOANUT OIL CAKE
for Horses, Milch Cows, Chickens, Young Pigs and Hogs. Cheapest feed on the market today. If your dealer doesn't carry it, address
EL DORADO OIL WORKS,
433 California St., San Francisco

BAGS For All Purposes
New and second-hand. Every bag thoroughly inspected before shipping. Bags for grain, potatoes, seeds, rice, onions, beans, etc. Whether buying or selling, communicate with us.
Pacific Bag Co.
869-873 Folsom St., San Francisco

The Romance of the Rice

(Continued From Page 7.)

regarded as a staple food. Rice produced in this State will be widely advertised as 'California Sweet Rice' and we are confident that it will soon meet with popular approval all over the United States, for California rice has a flavor distinctly its own."

Far-sighted Plans

In conjunction with the advertising campaign, steps will be taken for the standardization of rice by the mills in Sacramento. This will insure high grade and quality, to the credit of California.

Thus it will be seen that the California growers will depend principally upon a home market. Competition in foreign countries, with Japan and China producing big crops, would be virtually out of the question for California growers, mainly because of the cheap labor available in Chinese and Japanese fields. China and Japan, however, cannot seriously interfere with the American Growers' home market. Should Congress restore the 2-cent tariff on importation of rice, as urged by American growers, protection which is believed by the association to be justly warranted would be provided. As it is now, the tariff is but 6 mills.

The association has employed a rice expert whose suggestions and recommendations have been a great aid to the grower. As an example, this expert found, much to his surprise, that California growers generally did not take the time or go to the trouble of shocking the rice after it was harvested. The expert advised them to do so. Those who followed his instructions profited by it, when a sudden rainfall visited the rice fields at an inopportune time; for their crops, shocked and capped like the wheat fields of the East in harvest time, were fully protected. Those who did not take the "tip" suffered losses.

The expert also advises as to the best methods of irrigation. Rice fields are laid out in small patches or "paddys" surrounded by "checks" or miniature dikes. At certain places in these checks are headgates controlling the flow of water. While the rice is growing the water is kept at a depth of about eight inches. The expert found from experience that it is advisable materially to increase the amount of water just as the rice is about to head, in order to secure the best results. Those who followed his suggestion and increased the depth of the water to two feet were rewarded with increased production. It was also pointed out that rice which remained after threshing is of value for the fattening of hogs.

Preparation of Land

In the preparation of land for rice culture the expert's services are also of much importance. In some instances little preparation is needed. One case is cited in which the ground was too hard to be plowed, and was simply disced, or "scratched," the seed sown and a bumper crop produced. In this respect California rice lands are vastly unlike those of the Southern States, where thorough cultivation is necessary.

However, it is realized that sooner or later greater consideration must be given this feature. It has been found that rice cannot be successfully grown on the same tract of land more than three years in succession. It is also recognized that care must be exercised in the manner of rotating crops. For instance, if alfalfa is grown in a field which is later devoted to the culture of rice, water grass becomes a more serious menace than is ordinarily the case.

It has been learned also that rice lands, after their three years of bearing, are very suitable for the raising of certain other grains. In Yolo County a splendid crop of barley was produced in a field that had previously yielded rice. This field had theretofore been worthless as a producer of grain, but the chemical changes undergone by the soil during the years of rice culture had apparently transformed it into a fertile tract.

THIS IS ONE OF THE MILLS THE RICE BUILT!

Many of the rice fields of the valley are farmed by Japanese and Hindus on the rental plan. It is estimated that 25 per cent of the crop is grown by Japanese and 22 per cent by Hindus.

Rice was grown for the first time in Shasta and Placer counties this year. Colusa County has the largest individual acreage. Following are the figures:

COUNTY.	ACRES.
Colusa	39,050
Glenn	34,500
Butte	32,200
Sutter	8,700
Yolo	8,400
San Joaquin	6,500
Yuba	6,200
Solano	3,000
Placer	600
Shasta	700
TOTAL	140,050

The yield averages 30 bags to the acre, or a total of 4,201,500 bags. The price for paddy rice, that is, rice as it goes to the mills, averages $6 per 100 pounds, compared with $4.32 in 1918. The 1919 crop will be worth between $22,000,000 and $25,000,000.

There are nine rice mills in the valley, three of the largest being located in Sacramento. The Sacramento River is a convenient means of transporting the grain from field to mill. Soon after the threshing season begins, the latter part of September, huge barges of rice, the cargoes worth from $30,000 to $50,000 each, can be seen on their way down the river to the mills.

California this year surpassed Texas as a rice-producing State and is now second only to Louisiana. If the prediction of a Government food official is borne out, California will be the nation's leading rice State within the next five years, which would indeed be an astonishing accomplishment, considering that the entire development of the industry would cover a period of only 12 years.

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Whether your tractor is going to last two years or ten depends on the oil you use.

Cheap oils, heavy or light, won't stand up under heat. PENNZOIL WILL!

Pennzoil is a Pennsylvania paraffin-base oil. Your tractor engine won't get hot enough to break it.

Pennzoil gives your tractor longer life. It protects working parts—saves repairs. Costs a little more, but worth it.

You SAVE by buying Pennzoil in 15-Gallon Drums

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A book that tells you what you need to know (not a catalog)—just issued.

101 pages—142 illustrations—endorsed by the horticultural press and prominent fruit growers everywhere.

You actually have to get this book in your hands and examine its contents to appreciate its real value.

Sent Postpaid for $1.00. Money cheerfully refunded if not satisfied.

Geo. C. Roeding
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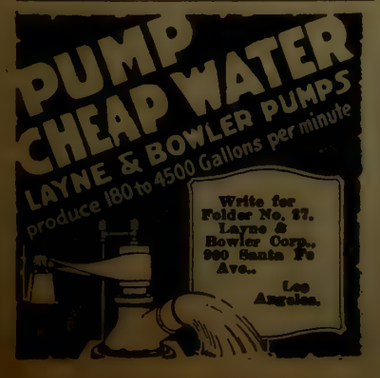


Dean Van Norman

(Continued from Page 5)

of making a great deal of money. This is the hazard of business. The more uncertain is the reward, the greater is the hazard and, therefore, the larger the reward must be when there is a reward, in order to compensate for the losses from unsuccessful enterprise. Whichever party to the enterprise—the capitalist, the management or the laborer—takes the hazard, is entitled to the variable reward.

Signs of the Times

American industry has been built up on the plan that labor was given a fixed reward or wage; capital took all of the hazard and therefore all of the variable reward. Today there is a disposition on the part of the laborer to want to share in the variable reward. This is well, provided he is willing to share in the hazard of the business. If he is willing to share in the hazard, he then is entitled to share in the brain power that manages the enterprise. Man covets not only a living, but a recognition of his human qualities, as distinguished from those of a machine. Labor, in the aggregate, covets this human recognition as well as financial reward.

Every enterprise large enough to require more than one individual; that is, enterprises in which one individual furnishes the capital and possibly the leadership, and a second party, without capital, furnishes the labor, has within itself the possibility of so organizing that the variable and fluctuating reward may be distributed equitably between the parties concerned, provided the laborer is willing to share the hazard as a condition of sharing the variable reward.

Labor Often at Fault

The weakness of much of our labor unrest lies in the fact that the laborer fails to recognize that the reward or income of the enterprise is variable; that some years the railroad or the factory, or the farm does not make or take in as much money as other years; that some factors in the enterprise cost much more; that the leaders of the enterprise misread weather or business or natural conditions, all of which affect the amount of variable reward to be distributed.

In the past, labor has had the fixed and oftentimes minimum reward and capital has taken all of the variable reward. The tendency today is for labor to want to share in the variable reward, and (I think legitimately), to share in the shaping of plans which affect that variable reward. If the laborers will "take the chance with the boss" and admit the inequality of individual earning power, plans can be worked out so that the first charge against any business shall be a minimum living wage; second, a minimum reward to capital, and third, an equitable distribution of the variable reward between labor and capital.

Billy Bug: "There's one of those confounded Bolsheviks, and he's blowing up my house!"

Why California?

An annual answering every question you want to know

Why is it the place to own an orange or walnut, olive or lemon ranch?

It is a great grain-raising State—do you know that—what are the possibilities that will interest YOU?

It is a great hog-raising State—why is it profitable to raise hogs in California?

What will it cost to own a beautiful white bungalow with red-tiled roof and garden brimming with flowers?

Why is it that in California people are happier and healthier—enjoy MORE of life—and it costs them less?

Is it true that California will become the great chemical producing locality of the world? What are such possibilities?

Is it true that the thousands and thousands of miles of dustless motoring roads are edged with flowers and lazy palms—and that one person out of every four owns an automobile in Southern California?

Is it true that California has the best schools in the whole wide world?

And is it a fact that California is destined to be the great center of industry for markets which will make the Old World markets dwindle into insignificance?

These and hundreds of other questions will be answered—information right down to date—in the annual publication

California *Its Opportunities and Delights*

This is distinctly a new type of periodical. It is unlike anything published in the world.

It is designed on the order of a magazine, beautifully illustrated.

It is entertainingly written, with life and feeling, by some of the most talented writers of the West.

"California" answers every question which any person interested in this State would like to know. It is a guide to the stranger, a statistical directory to the home seeker, agriculturist or investor, an encyclopedia of up-to-the-minute information to even the resident now living within the State. It is so exhaustive that it takes a year of continuous work to compile it.

It supersedes anything and everything published to promote the interests of this State.

Price 25c

—on sale at all newsstands early in 1920.

—better order your copy NOW.
Address: "CALIFORNIA,"
11th and Broadway, Los Angeles.

After 20 years

A PUMP developed out of a 20-year experience in building pumps is one from which to expect the highest efficiency.

Such is our BEAN UNIVERSAL PUMP—BELTED.

It's the pump we have selected out of a full line because it embodies all of the strong features found in all of the others.

Practically all centrifugal pump troubles, when they do occur, are stuffing box troubles. To prevent them we provide a generous water sealing bowl. Filled with water, the shaft is completely surrounded where it enters the case. As a result, danger of loss of priming is minimized, nor is it necessary to cinch the packing down so tight that the shaft is injured. It is not difficult to see the advantage of this feature.

This Bean Universal Pump

is provided with an automatic water balance and an extra heavy, oversize outboard bearing. This bearing provides almost unnecessary insurance against excessive vibration and makes belt changes easy and simple. An extra web of metal between the sealing bowl and the outboard bearing standard provides against strain and vibration. It's a liberally braced, sturdy pump. Both suction and discharge adjustable at any angle.

Let us tell you the kind of equipment to install to insure the largest head of water at the least cost.

Mail the coupon today!

Bean Spray Pump Co.

201 San Julian St., San Jose, Cal.
Branches: Fresno Los Angeles

(Clip Out and Mail)

Distance to water below surface of ground.....
Probable distance to water when pumping.....
If water is to be raised above surface of ground, how high? (Length and size of pipe line).....
Volume of water desired (Gals. per min.).....
(Inches) .....
If you have pit, give width..... length.....
depth .....
H.P. of motor or engine if you have that equipment .....
Give total depth of well.....
Inside diameter of well.....
Is well straight and true?.....
Is electric power available?.....

Name .....
Address .....
Rural Route No.....
201 Box.....

The Poor, Backsliding Farmer

By Chas. P. Hawkins

Los Angeles Branch, International Harvester Company

(Written Especially for Orchard and Farm)

Consider the "poor" farmer. He is backsliding from good to better right along. He is drifting straight into the lap of progress with his eyes wide open. Little wonder that he is prospering!

SEVENTY-FIVE years ago the benighted agriculturist hung his cradle-scythe on a high rafter in his barn where he'd never see it again, and bought a reaper so that he could harvest six acres of grain per day instead of only two. Twenty-five years later he "back-slid" some more; he abandoned the faithful old reaper and invested in a self-binder to replace it, just because the binder would harvest from 15 to 20 acres of grain per day and save the labor of two men. Then five years ago what did he do but buy a tractor, for no reason in the world except that it would do his heavy farm work quicker and more economically than he could do it with horses; the poor horses were given all the easy jobs and the tractor was favored with only the heavy tasks.

Even More Startling—

But even this was not the end. No! The farmer needs must buy him a touring car so that he could take his family to the movies now and then and make quick jumps to town for supplies or a necessary repair part for a broken-down machine during his busy season. Flossie and Dobbin were turned out in the pasture to speculate on the luxuries of a life of ease and the hens began to lay eggs in the seat of the old top buggy.

Oh, what are we coming to! The next thing we knew, we found the weather-beaten old farm house ruined forever by fresh paint, modern plumbing, an up-to-date heating system and the installation of an electric lighting plant. Gone are the joys of the old rain barrel and the basin on the soap box just outside the kitchen door with the "free for all" begrimed roller towel hanging on a convenient nail; gone is the exquisite sensation of shivering in the unplastered, unheated room up under the rafters while Old Boreas amused himself with the rattling window sash, and a leaky roof made one dream of swimming the English Channel; gone is the profound delight of straining the eyes trying to read the newspaper or thread a needle in the dim glow of the dear, old smelly kerosene lamp. It doesn't seem possible that the farmer could backslide, or rather frontslide further—but he has.

Yes, sir, he's committed the biggest forward slide of his career during the past couple of years. He has invested in motor truck transportation! You've got to hand it to the American farmer—he knows a good thing when he sees it. It didn't take him any time at all to discover that the cost of hauling with a motor truck was only one-half that of hauling with horses. And Uncle Sam's Department of Agriculture recently proved it!

"It All Depends"

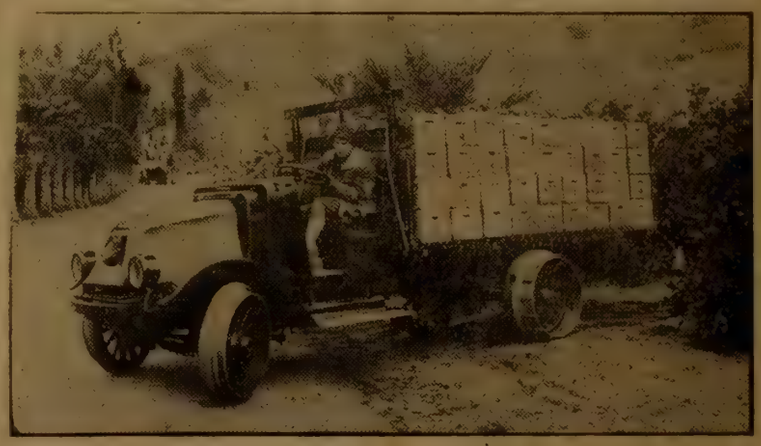
The salesman has his arguments, of course, to prove that his is a good truck. Does the farmer believe him? If the farmer buys a truck, has he purchased the proper unit? All this can be answered with the experiences of motor-truck users. If they are satisfied and will swear by their trucks, then they have been "sold right"; if they are dissatisfied and tell you that such and such a truck is no good, then you can make up your mind they have either bought "orphan" trucks, or have been sold the wrong units.

The question of choosing the right size for the work is, therefore, one of the most important to be considered.

The unusual problems in motor truck hauling can always be solved if only thought is applied. Observe the accompanying photograph. The owner has placed a three-inch extension flange on each of the front wheels and a five and one-half inch extension flange on the rear wheels; the rear wheel flange is equipped with a growser or lug, such as is used on tractors, and enables the farmer or rancher to get in and out of the soft, sandy places. It adds traction to the natural power of the truck. The flange is pressed on the outside rim of the wheel. The regular solid or pneumatic tire is taken off and then re-fitted. These flanges do not in any way affect regular road hauling work, as you can see from the photograph that the flanges are from two to four inches above the road surface, depending of course upon the size of the tire.

This "accessory job" cost about $100 but is worth several hundred dollars to the farmer who must get in and out of soft places with a load.

The farmer is the largest user of motor trucks in the world, and his problems are the most complicated. That concern which caters especially to the farmer and makes an honest effort to meet his peculiar requirements is surely deserving of his earnest consideration.



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Motor Trucks

Form 1201

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Helpf

Dear Friends:

How many le wives there will ceive the trainin students at som colleges! When courses first weigh sisted principally and it was left to the the ideas into school.

Now, however combine theory the lessons will The Colorado maintains an house, where the eight, take up ti riods of eight time they do all management of maintaining the

The work inc dispatch of rout care and prepara studies in the co

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A tree-lined cou small, But neatly ke simple flo Red roses climb wall And song-bird happy hou Yet no more su whose voi Came floating the air. What traveler c joice? I went my wa there!

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Beware Can

Canning con various tradena canning are oft and should nev wives, is the wa ernment chemi tions, which are form and cont boric acid, are fruit and veget long periods of tion without an tives whatever canning are foll

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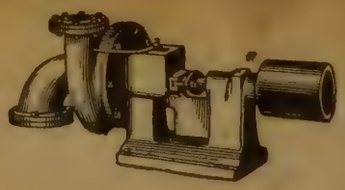
Garments will that have harde while new.

Keep the mis a wide-mouthed to find the pa after.

Have heels bu wear off, other soon gets out o



After 20 years

A PUMP developed out of a 20-year experience in building pumps is one from which to expect the highest efficiency.

Such is our BEAN UNIVERSAL PUMP—BELTED.

It's the pump we have selected out of a full line because it embodies all of the strong features found in all of the others.

Practically all centrifugal pump troubles, when they do occur, are stuffing box troubles. To prevent them we provide a generous water sealing bowl. Filled with water, the shaft is completely surrounded where it enters the case. As a result, danger of loss of priming is minimized, nor is it necessary to cinch the packing down so tight that the shaft is injured. It is not difficult to see the advantage of this feature.

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Let us tell you the kind of equipment to install to insure the largest head of water at the least cost.

Mail the coupon today!

Bean Spray Pump Co.

201 San Julian St., San Jose, Cal.
Branches: Fresno Los Angeles

(Clip Out and Mail)

Distance to water below surface of ground.....
Probable distance to water when pumping.....
If water is to be raised above surface of ground, how high? (Length and size of pipe line).....
Volume of water desired (Gals. per min.).....
(Inches) .....
If you have pit, give width..... length.....
depth .....
H.P. of motor or engine if you have that equipment .....
Give total depth of well.....
Inside diameter of well.....
Is well straight and true?.....
Is electric power available?.....
Name .....
Address .....
Rural Route No. .....
201 Box.....

WE HAVE SOME VERY BEAUTIFUL ORNAMENTALS

Large Specimen Trees and Plants

Which will produce immediate effects.

Saves years of waiting. You can enjoy the trees the moment they are set.

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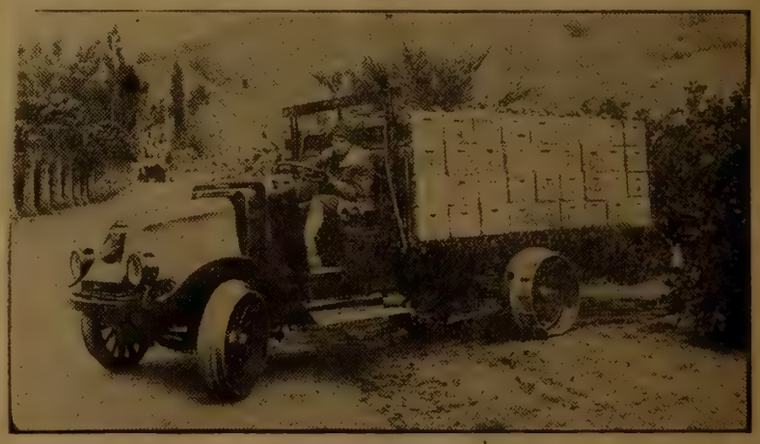
The salesman has his arguments, of course, to prove that his is a good truck. Does the farmer believe him? If the farmer buys a truck, has he purchased the proper unit? All this can be answered with the experiences of motor-truck users. If they are satisfied and will swear by their trucks, then they have been "sold right"; if they are dissatisfied and tell you that such and such a truck is no good, then you can make up your mind they have either bought "orphan" trucks, or have been sold the wrong units.

The question of choosing the right size for the work is, therefore, one of the most important to be considered.

The unusual problems in motor truck hauling can always be solved if only thought is applied. Observe the accompanying photograph. The owner has placed a three-inch extension flange on each of the front wheels and a five and one-half inch extension flange on the rear wheels; the rear wheel flange is equipped with a growser or lug, such as is used on tractors, and enables the farmer or rancher to get in and out of the soft, sandy places. It adds traction to the natural power of the truck. The flange is pressed on the outside rim of the wheel. The regular solid or pneumatic tire is taken off and then re-fitted. These flanges do not in any way affect regular road hauling work, as you can see from the photograph that the flanges are from two to four inches above the road surface, depending of course upon the size of the tire.

This "accessory job" cost about $100 but is worth several hundred dollars to the farmer who must get in and out of soft places with a load.

The farmer is the largest user of motor trucks in the world, and his problems are the most complicated. That concern which caters especially to the farmer and makes an honest effort to meet his peculiar requirements is surely deserving of his earnest consideration.



This Two-ton Truck

Successfully transports 6480 pounds of fruit through soft ground, by means of the wheel-flanges described in accompanying article. The truck is owned by Elsbury W. Reynolds of Chicago and Los Angeles, widely known as publisher of Harold Bell Wright's novels.

PATRIOT

Motor Trucks

Form 1201

CLASS OF SERVICE	SYMBOL
Telegram	Blue
Day Letter	Nite
Night Message	N L
Night Letter	

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

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YOU WILL BE PLEASED TO KNOW THAT A TWO AND ONE HALF TON PATRIOT TRUCK HAS BEEN OPERATING DAILY FOR SIX MONTHS IN STOCKTON TERRITORY AND DURING GRAIN HARVEST WORKED TWENTY FOUR HOURS PER DAY AVERAGING FIVE TONS A LOAD AND TRAILING FOUR TONS BEING OPERATED BY THREE DRIVERS SAME TRUCK IS NOW OPERATING BETWEEN STOCKTON AND SONORA FORTY MILES OVER MOUNTAIN ROADS ALWAYS CARRYING HUNDRED PERCENT OVERLOAD AND GIVING PERFECT SATISFACTION A ONE AND ONE HALF TON PATRIOT IS HAULING ORE IN NEVADA OVER WORST ROAD CONDITIONS IMAGINABLE FROM TONOPAH TO MINE EIGHT MILES AWAY MASTERING THIRTY PERCENT GRADES WITH EASE THE PERFORMANCE OF THESE TWO AND MANY OTHERS IN DIFFERENT LOCALITIES DECIDED US TO BACK PATRIOT TO THE LIMIT PATRIOT TRUCKS HAVE BEEN IN COMPETITION WITH EVERY WELL KNOWN TRUCK IN CALIFORNIA AND ALWAYS PROVED SECOND TO NONE AND SUPERIOR TO MOST THEIR WONDERFUL PULLING POWER SIMPLICITY OF CONSTRUCTION AND ECONOMY OF OPERATION HAVE GAINED ADMIRATION OF TRUCK USERS OF THE WEST WE ARE PROUD TO BE DISTRIBUTORS FOR PATRIOT TRUCKS AND ARE BEHIND THEM WITH OUR FULL STRENGTH AND REPUTATION

L D KING CO.

Built for Country Roads

Built for Farm Loads

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Manufacturers

1371 P Street - Lincoln, Nebraska

REVERE MODEL	LINCOLN MODEL	WASHINGTON MODEL
1500 to 2500 lbs.	3000 to 5000 lbs.	5000 to 7500 lbs.

Helpful Hints for Housewives

Dear Friends:

How many less dissatisfied housewives there will be when all girls receive the training that is now open to students at some of the agricultural colleges! When home economics courses first were instituted, they consisted principally of theoretical studies and it was left to the students to put the ideas into practice after leaving school.

Now, however, the tendency is to combine theory and practice, so that the lessons will never be forgotten. The Colorado Agricultural College maintains an eleven-room practice house, where the students, in groups of eight, take up their residence for periods of eight weeks, during which time they do all the work incident to management of the household and maintaining themselves.

The work includes scheduling and dispatch of routine duties; selection, care and preparation of food; practical studies in the care and use of household equipment and furnishings; management of the heating plant and water-heaters; mechanics of household accounting and the keeping of various kinds of household records; and observation of practices that help to make living comfortable and harmonious.

To the girl who possesses any domestic tendencies (and there are relatively few who do not), such a course is fascinating. A year or two of college training in home-making combined with the regular college "arts and letters" course, and followed or interspersed with musical training, give the young girl such a superior start in life that no parents should fail to plan for and make possible such advantages if it is humanly possible to afford them. The "old-fashioned" Mother, bless her, will no doubt be surprised by some of the things daughter can show her about home management after a few weeks in a college "practice home."—Isabel Sinclair.

Two Dwellings

By Doris Virginia Lee

A lovely mansion on a famous street—
I paused, in awe, to wonder and admire.
How glorious that Taste and Wealth should meet
Their common thought such beauty to inspire!
Then suddenly, through open window came
A harsh tirade—a hot, profane reply.
Uncouth and raucous. As I turned in shame,
A grinning little urchin hurried by.

A tree-lined country road; a cottage small,
But neatly kept, and banked with simple flowers.
Red roses climbed along the garden wall
And song-birds whiled away the happy hours,
Yet no more sweetly trilled than she whose voice
Came floating from within and filled the air.
What traveler could pass and not rejoice?
I went my way—but left my burden there!

Beware Canning Compounds

Canning compounds sold under various tradenames for use in home canning are often harmful to health and should never be used by housewives, is the warning issued by Government chemists. These preparations, which are usually in powdered form and contain salicylic acid or boric acid, are unnecessary, since fruit and vegetables can be kept for long periods of time in perfect condition without any chemical preservatives whatever if proper methods of canning are followed.

Have play clothes for the children.

Garments will wear longer if parts that have hardest wear are reinforced while new.

Keep the miscellaneous buttons in a wide-mouthed jar; it makes it easy to find the particular one you are after.

Have heels built up as soon as they wear off, otherwise the entire shoe soon gets out of shape.

Cleaning With Powders

Powders used in dry cleaning are French chalk or magnesia, fuller's earth, corn meal, sawdust, etc.

Warm the meal or powder.

Spread it on the material and rub it in either with the hands or with a brush. Let it remain at least several hours.

Renew the powder or meal as it becomes soiled.

If one treatment is not enough, cover again with warm powder or meal and let it stand overnight.

Be sure to brush all powder or meal from the garment.

This method is especially good for collars or other parts which show soil before the rest of the garment.

The inside of a banana peel, well rubbed on, will remove ink stains from the fingers.

Figs and dates instead of much candy for the children will be a source of much benefit and not of harm.

Did you ever use worn-out phonograph needles for brads or tacks?

Put it up to

SAY what you will, the final test of a feed is: *does it make your hens lay?* If it does that—if it makes your hens produce eggs and more eggs—*and keeps them in fine condition all the while*—then, it's a good feed.

Regularity in feeding is important, of course. But, even more important, is *uniformity* in feeding. With hand-mixed feeds you can never be sure that one batch is like another. No matter how careful you are, no matter how sure you *think* you are, you can't run away from the fact that it's *guess-work* at the best.

That's why thousands of successful poultrymen have turned to Sperry Surelay. They have found in Surelay a simple and *economical* solution of their feeding problem.

Surelay is not only right—always the sa oratory tests (somethi does not, and can absolute uniformity

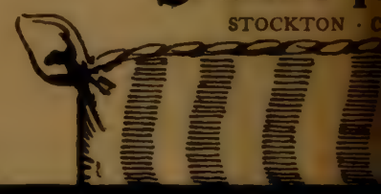
Surelay is worked with a *practical*, scie has stood the test of ti as to provide just t *protein* for the white right amount of *fa* contains *fourteen* that every hen in y make her a profit-p

Moreover, our lar tion enables us to m the finished produ

STOCK AND POULTRY

SPERRY F

STOCKTON



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"A Sperry

Stock and Poultry Food Department
SPERRY FLOUR CO.
160 Weber Avenue
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Gentlemen:—Please send me, without obligation, your booklet, "Makes Hens Happy."

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average feeder can *buy* the ingredients —to say *nothing* of the cost and trouble of mixing.

After all, all we ask you to do is to put the egg-production question squarely up to your hens. Feed them Sperry Surelay—and judge its value by what the hens do for you. Let the substantial figures on your Egg Record prove to you the wisdom of using this *uniform*, dependable feed.

If you haven't a copy of our hand-book, "Makes Hens Happy" you ought to have it. For, it contains some mighty practical hints about poultry-raising and some mighty good profit-pointers. A copy is yours for the asking—simply fill in the coupon and mail today!

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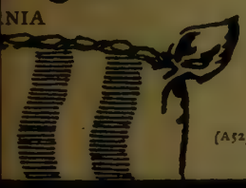

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LAY
oduct"

Be sure to look in your Surelay sack for the Certificate that entitles you to our 1920 Surelay Egg Record and Calendar

Home-Made Grape Syrups

IT is comparatively easy to make syrup from grapes. And the product is useful in many ways, especially in cooking and candy-making.

The Grapes—Use fully ripe or even over-ripe grapes. Red grapes make the most attractive syrup.

Crushing—The grapes may be crushed with a potato masher in an agateware vessel or may be simply crushed with the hands. A small fruit crusher from the hardware store will facilitate the work. Break all of the grape skins and place the crushed grapes in an agateware, tin or aluminum kettle; a large dishpan is excellent. Do not use iron.

Heating on the Skins—Heat the crushed grapes with constant stirring to avoid scorching until a thermometer immersed in the grapes registers 150 degrees F. to 160 degrees F., or until the grapes are almost simmering hot. Then set them aside for three or four hours, if red grapes are used; if white grapes, press at once. Red grapes are allowed to stand several hours to give the juice a red color.

Pressing and Straining—Throw the grapes after the above treatment into a stout jelly bag. Allow to drain thoroughly; then twist or "squeeze" the bag to extract remaining juice, but keep the juice obtained by pressing separate until it is strained again to clear it.

If a small cider press is available, a larger yield is obtained.

Clearing the Juice—Heat the juice to boiling and allow it to stand over night in a cool place. Heat throws down proteins and gums which would later make the syrup cloudy unless removed. Strain the juice until it is as clear as it can be made by use of a jelly bag.

Removing the Acid—Some prefer a syrup with very little tart taste; others prefer the syrup with all its natural acid. If one wishes the former type of syrup it is necessary to remove some of the natural grape acid with carbonate of lime, which is another name for "precipitated chalk." (Buy precipitated chalk at the drug store.) To each gallon of juice add half an ounce of precipitated chalk. The druggist will weigh out the proper amount for you. Add the chalk and stir. Heat to boiling. Allow to stand over night. Strain through a jelly bag.

Boiling Down the Syrup—Place the sour juice, or the juice treated with chalk, as the case may be, into an agateware dishpan (do not use iron). Heat quickly to boiling and boil down very quickly to a thin syrup; boil down in small lots, because the long boiling necessary with large lots causes undue scorching and loss of flavor.

Sealing in Jars—Pour boiling hot into jars and seal at once. Or pour boiling hot into wax-top cans and seal in usual way.

Concentrating in the Sun—In these columns was described several years ago a process for making syrups by drying juices in the sun. It is known as the "Waterhouse" method. To use this process place a broad shallow pan in the sun. Above it hang strips of cheesecloth from a clothes line. Place juice in the pan. Dip the cheesecloth into the juice and hang it above the pan. The adhering juice is soon (in ten minutes) dried to a syrup. Now dip the cheesecloth in the juice again and wring out the juice into the pan. Dip the cloth in the juice again and again hang it up to dry. Repeat this cycle every few minutes until the juice is dried to a syrup. Then heat it to boiling and seal in jars hot.

This process gives a syrup of better flavor than that obtained by boiling down on the stove.

Remarks—One cannot make by the home process as good a syrup as can be made upon a large scale by the vacuum process. Nevertheless a product of fair quality can be made, especially after a little practice. If a sugar tester is available the syrup should be boiled until it tests 70 degrees Balling or 34 degrees Baume or until it boils at 219 degrees F. by the thermometer test used for jellies.

Different Uses for Figs

Canned Figs

Pick over the fruit carefully and rinse in a strainer with cold water. Pack into hot jars without crushing. Cover with a hot syrup having the proportion of 3 pounds sugar to 8½ quarts water.

Put on rubber, adjust (but do not seal) the cover. Cook 16 minutes in a hot water bath, counting the time from the moment the water begins to boil; or cook 12 minutes in a pressure cooker, with 5 to 10 pounds pressure of steam, then seal.

Dried Figs

Select ripe figs and pick over thoroughly. Wash, drain well and spread in single layers on drying trays in the sun. Turn daily and bring indoors at night. When nearly dry, immerse figs for one or two minutes in boiling brine (1 pound salt to 3 gallons water). Drain and finish drying.

White figs may be sulphured, if desired.

If no drying trays are available, a clean window or door screen supported at the four corners makes an excellent tray. Be sure to protect drying fruit with netting, screen or glass over it, so that insects cannot reach it to deposit their eggs.

Crystallized Figs

Wash and dry the figs. Make a thick syrup having the proportion of one part sugar to two parts water. Boil figs in this for one hour three days in succession, removing them at the end of the hour each day to a platter. Set platter in sun. Bring indoors at night. After the three days' boiling, put in sun until perfectly dry. Pack in tin boxes lined with oiled paper. If figs are very firm, puncture several times with toothpick before cooking.

Fig Marmalade

Peel the figs. To 1 pound fruit add ½ pound sugar, the juice, pulp and ½ the rind of 1 lemon. Boil until thick. Orange may be used in place of lemon, if desired.

Pickled Figs

Seven pounds figs, 1 quart vinegar, 3½ pounds brown sugar, cinnamon, cloves, allspice, in cheesecloth bag.

Pick over figs carefully. Cook a few at a time in the boiling syrup, until tender; pack in jars, boil down the syrup and pour over figs.

Cash for Turkeys
AND ALL POULTRY

Be fair with yourself. You have used great care and hard work raising your flocks. Why not use the same careful methods in marketing them?

Take no chances but sell direct to the largest exclusive Poultry House on the Pacific Coast, whose responsibility is unquestioned, and be sure to get the highest market price.

Our reputation is built on fair dealings, honest weights and quick remittances covering a period of 12 years.

References: Citizens' National Bank of Los Angeles, Cal., or your own Banker can tell you who we are.

NATIONAL POULTRY COMPANY, INC.

607 East Third Street, Los Angeles, Cal.

Write us the number of Turkeys or Fowls you may have to sell, as we operate branch houses and may have a buyer in your vicinity.

Notice to Subscribers

NOW IS YOUR

Last Chance

To subscribe to Orchard and Farm at our present subscription price of 50 cents per year or three years for one dollar. Commencing on December 1st our rates will be increased to one dollar for one year or two dollars for three years.

This increase in subscription rate is necessitated by the great increase in the cost of everything connected with the printing business.

A PROGRESSIVE MOVE

We feel this is truly a progressive move as it will enable us to continue to improve Orchard and Farm. Take advantage of our unusually low rate, and renew your present subscription for one or three years. Remember, 50 cents for one year, or one dollar for three years until November 30, 1919.

POSITIVELY NO SUBSCRIPTIONS ACCEPTED AT OLD RATE AFTER NOVEMBER 30.

Enclosed find 50c for 1 year, or $1.00 for 3 years, new or renewal subscription to Orchard and Farm. It is understood this is to be extended on my present subscription.

NAME .....

ADDRESS .....

ORCHARD AND FARM 1111 SOUTH BROADWAY, LOS ANGELES, CALIFORNIA

Get More Eggs; Save Feed

Egg prices are high and going sky-high—higher than ever before. Those who know how and what to feed to get the most eggs all winter and spring will reap big profits. Improper feeding methods will result in fewer eggs, wasted feed—loss and disappointment. Prof. T. E. Quisenberry, Director-in-Chief of the great American Egg Laying Contest, and officially recognized as one of the world's greatest poultry authorities, has just completed a 16-page bulletin on "How to Get More Eggs and Save Feed." He will mail this bulletin to readers of Orchard and Farm who will write him without delay. Send no money. Over a thousand hens under Quisenberry's direction laid from 200 to 304 eggs each per year. He just finished making a profit of $6.15 per hen in nine months on commercial eggs from one large flock. Write him today for his free bulletin, addressing care of American Poultry School, Dept. 981, Kansas City, Mo.

When answering advertisements please mention Orchard and Farm.

PIANOS

Upright pianos rented, $1 mo. up. Player pianos rented $4 mo. up. Grand pianos rented $6 mo. up. Phonographs rented $1 mo. up. All rent paid can apply on purchase later.

J. J. FOSTER,

622 S. Broadway, Los Angeles.

MISCELLANEOUS—WANTED

WANTED—One of our new subscribers wants a file of back numbers of Orchard and Farm, and we lack copies of the March, 1916, issue; February, 1918, and June, 1919. We would appreciate hearing from any of our subscribers who could let us have copies of these issues, and will gladly pay the cost. Address Back File Dept., Orchard and Farm, Examiner Building, Los Angeles, Cal.

Pretty Costumes

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability t the needs of the home dressmaker. None is elaborate or complex and all ca easily be made from the patterns provided by this department. To get any of th patterns send ten cents in silver or stamps to Pattern Department, Orchard an Farm, "Examiner" Building, Los Angeles.

3005—Boy's Suit

Cut in 4 sizes: 3, 4, 5 and 6 years. Size 4 will require 3¼ yards of 27-inch material. Price 10 cents.

3017—A Pleasing Dress

Cut in 3 sizes: 16, 18 and 20 years. Size 18 will require 6¼ yards of 38-inch material. Width of skirt at lower edge, about 1½ yards. Price 10 cents.

3015—Lady's Dress

Cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Size 38 requires 6⅜ yards of 44-inch material. Width of skirt at lower edge, about 1⅝ yards. Price 10 cents.

3018—Child's Play Dress

Cut in 4 sizes: 2, 3, 4 and 5 years. Size 3 will require 2¾ yards of 27-inch material. Price 10 cents.

3016—Lady's House Dress

Cut in 7 sizes: 36, 38, 40, 42, 44, 46 and 48 inches bust measure. Size 38 requires 5¼ yards of 36-inch material. Width of skirt at lower edge, 2¼ yards. Price 10 cents.

3007—Junior's Dress

Cut in 3 sizes: 12, 14 and 16 years. Size 14 will require 3¾ yards of 44-inch material. Price 10 cents.

3003-3020—Stylish Business Costume

Waist 3003 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. It requires 3 yards of 36-inch material for a 36-inch size. Skirt 3020 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. Size 24 will require 2¾ yards of 54-inch materia Width of skirt at lower edge is 1 yards. Two separate patterns; cents for each pattern.

3023—Lady's Apron

Cut in 4 sizes: Small, 32-34; me dium, 36-38; large, 40-42; and extr large, 44-46 inches bust measure. Siz "medium" requires 4¾ yards of 3 inch material. Price 10 cents.

2694—Girl's Dress

Cut in 4 sizes: 6, 8, 10 and 12 year Size 10 will require 3½ yards of 4 inch material. Price 10 cents.

Catalogue Notice

Send 10c in silver or stamps for o up-to-date fall and winter, 1919-19 catalogue, containing 550 designs ladies', misses' and children's pattern a concise and comprehensive article dressmaking; also, "Some Points f the Needle," illustrating 30 of th various simple stitches. This boo contains many valuable hints for th home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for whic send me the following patterns:

Pattern No.....Size.....

Pattern No.....Size.....

Pattern No.....Size.....

Be sure to give number and size. Se orders for patterns to ORCHARD AN FARM, "Examiner" Building, Eleventh a Broadway, Los Angeles. Be sure to sig your full name and address below.

Your Garden of Flowers

By Helen Temple

NOVEMBER usually brings rains; therefore it is advisable that before they commence we give our gardens a deep spading. Any changes that are planned for the garden should be made this month. Dry plowing or spading gives the soil an opportunity to throw off any sourness; then, too, when the heavy rains come, every drop of water soaks into the soil. There is no water quite as beneficial as rain-water, and it is best to save every drop of it, even though we have an abundance of water for irrigation.

Soils that have been irrigated and sub-irrigated should be turned over dry. Sub-irrigation brings alkali to the surface and it is very necessary that sub-irrigated soil become thoroughly aired and dried before the heavy winter rains. Rain helps to wash the alkali out of the soil. If possible, spade in a liberal amount of stable manure. It makes heavy soils more friable, builds up the lighter soils and enriches any garden.

Carnations may be started this month, with seed or cuttings, by means of layering. The use of cuttings is the most satisfactory method. The cuttings should be stocky and have short joints, and should be about three and one-half inches long. The best method of rooting them is to start them in cutting boxes about six inches deep. The cutting box should have holes in the bottom for drainage, and a two-inch layer of gravel or coal ashes under the sand. This must be watered and packed hard before cuttings are placed in it.

Do not allow the cuttings to become dry after they are taken from the plant, and do not let the sand become dry after they are placed in it. Under favorable conditions, the cuttings will be ready to take from the sand in a month, and planted, either in the open ground or in pots, where the frosts are not heavy. After they are thoroughly established, they will stand a certain amount of frost and severe weather.

Plant a Border of Iris

The Irises will bloom year after year with little or no care; why not start a border or bed of them? You will spend a few hours, to be sure, in planting them this month, but think of the many weeks of enjoyment they will give you next spring! A border planted alternately with the Lutea (or yellow) and the azure blue of the dwarf variety adds wonderfully to the beauty of the home surroundings.

Just such a border will transform a prosaic walk or path into an adornment of which you may well feel proud. The Iris grows in almost any location, and is not particular as to soil. These flowers are propagated by lifting and dividing the large clumps after they have stopped blooming. It is not necessary to lift and reset them oftener than once in three years. In that length of time, however, they will have multiplied so much that the growth of the plant will be choked, and the flowers and stems stunted.

Of the Irises, there are five distinct families or races that are well known in California. The growing of them all is practically the same; yet we find that the Japanese Irises require more moisture than the others. They do unusually well around a pond.

One of the most beautiful Irises that I have ever seen was of the Fleur des Lis garden variety. It was called the Queen of May, and was almost pure pink in color. The pink Iris is rare, but those who love that shade can grow them just as easily as any others, although the first cost of bulbs is about 20 per cent more than that of the other varieties.

Plant Alyssum This Month

If you live where the frosts kill the out-door gardens, start a box of Alyssum for your window, and at Christmas time you will have blossoms. Alyssum will stand a certain amount of frost and therefore can safely be started in the open in most sections of California. It forms a dainty border and grows as easily as our California weeds, in any medium soil. The Snow-tuft Alyssum is the daintiest of them all, and its tiny blossoms simply cover the plant.

Candytuft will stand light frosts and grow well almost anywhere. This was a favorite flower more than 300 years ago, and still holds favor in the modern garden. Originally, the Candytuft came from Candia, Greece, but that original flower has been improved so much that its blooms are many times as large and beautiful. The dwarf varieties make a real, old-fashioned, and attractive border. Sow the seed as you would any other. It is not necessary to transplant the plants.

Clarkias and Calendulas

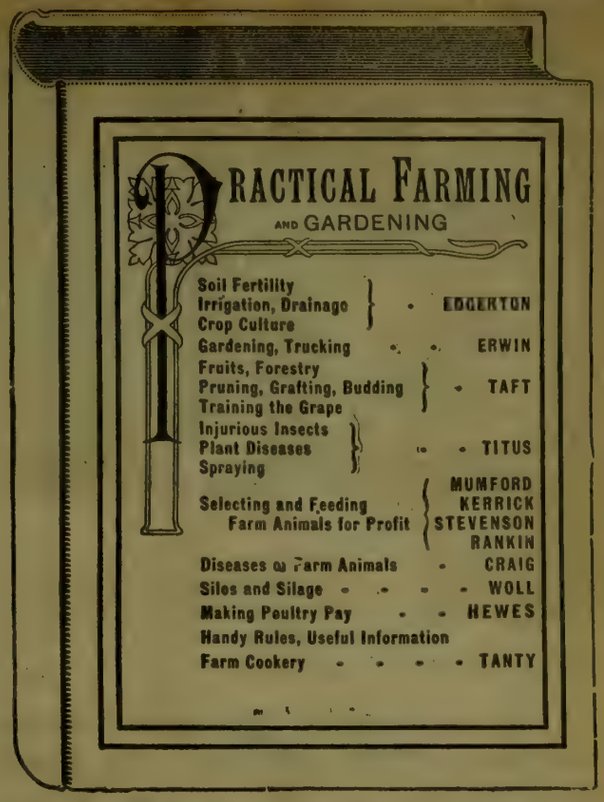
Both Clarkias and Calendula are very hardy and will do well in any medium soil. The Scarlet Queen Clarkia makes a bright spot in the garden. Every branch is covered with bright scarlet blossoms that look very much like small double Hollyhocks. They branch freely and must not be set too close together. The Scarlet Queen Clarkia makes a splendid border along a row of dark shrubbery.

The Calendulas will stand frosts after they are well established, and do not need very much attention. Brighten up your dull corners with some of those bright, orange-colored ones. If you live far out in the country where there are miles and miles of flat, uninteresting landscape, or in a city, with a certain amount of dull pavement to look upon, these bright spots in the garden make one feel cheerful.

Centaurea and Columbine

Centaurea is very hardy and is as much a favorite in the modern garden as it was in our great grandmother's time. The Royal Sweet Sultan is the variety of Centaurea that is so popular in the florist's shop; it is larger than the Bachelor's Button, which was so well-known years ago. The Bachelor's Button, however, is still a favorite. The Centaurea origi-

(Continued on Next Page)



MAKING THE FARM PAY

MONEY-SAVING AND MONEY-MAKING METHODS

Throughout the text of this great book the reader is given the results of scientific research, coupled with successful experience, by use of only such expressions as can be readily understood by those who have not had a scientific training. Thus, any farmer with ambition to make the most of his labor and realize the greatest returns for his investment will find in this volume a priceless guide for every-day reference.

Edited by

WILLIS MACGERALD

By an Eminent Array of Specialists.

This work has been divided into departments, each covering subjects of vital importance, and each prepared by a specialist in his line, who has devoted his life of thought, study, experiment and practical experience to his special subject. The list of authors whose names are familiar to wideawake farmers will be found on accompanying cut of book in connection with the subjects covered by each.

It is needless to say that the advantages to be gained from a single practical idea, taken from any of these departments and put into practice, is worth many times the small expense incurred adopting the more approved methods.

ENDORSED BY THE LEADING AGRICULTURAL JOURNALS OF THE U. S.

This attractive volume is a veritable encyclopedia on a subject, embracing the entire sphere of farming. It offers a collection of money-saving methods in agriculture, treated by specialists who have devoted a life of thought, study, experiment and practical experience to the special subjects they deal with. It is written in a style that any farmer can understand and the volume will form a priceless guide for every day reference.

PRACTICAL EXPERIENCE

Think of having the world's ablest, keenest, most adept agriculturists show you just what to do, how they do it, and why—so you can use the methods that have given them fame and fortune. No longer need you lose by working blindly. In every section of the West at least one or a dozen men have been successful in every line, and by studying their experiences and failures you may avoid the losses.

DESCRIPTION AND PRICE

This volume consists of over 500 pages, handsomely bound in cloth, size 8½ inches long, 6½ inches wide, richly illustrated on good book paper; 200 fine drawings and half tones with feeding chart in colors. While the present supply lasts the book will be mailed postpaid, including three years' subscription (new or renewal) to Orchard and Farm, the great Western Farm Magazine, for $1.50. If after receiving Practical Farming you find it is not just as advertised, and you are not thoroughly convinced it is a wonderful bargain, return it at our expense and we will cheerfully refund your money.

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Gentlemen: Enclosed find $1.50, for which send one copy of Practical Farming postpaid, including three years subscription to Orchard and Farm. It is understood I will return the book within five days if not entirely satisfactory, and my money is to be refunded.

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You'd rate Hanes winter Men's Union Suits and Shirts and Drawers *sensational value* if you followed the bales of fine, long-staple cotton from the moment they entered the Hanes Plant until you saw Hanes Underwear packed into boxes for shipment all over the nation!

What goes into Hanes in quality and workmanship comes out to you in extra-wear, extra-comfort, extra-warmth!

Read every detail and compare with the circles in the diagram figure above, because you should understand that Hanes hands you: *Guaranteed* unbreakable seams, with reinforcements at every strain point; buttonholes last as long as the garment; elastic knit collarette that won't gap; shape-holding elastic knit shoulders; snug-fitting three-button sateen waist-band; elastic knit wrists; pearl buttons sewed on to stay!

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If your dealer cannot supply you with Hanes write us immediately.

Union Suits for Boys are as wonderful value as are our men's garments. To mothers and fathers Hanes boys' Union Suits are superb. Cosy, fleecy warmth and the finest workmanship put these boys' suits in a class distinct from all others. *They certainly do stand the wear and wash!*

P. H. HANES KNITTING CO., Winston-Salem, N. C. New York Office, 366 Broadway

Your Garden of Flowers

(Continued from Page 27)

nated in Europe and is said to contain certain medicinal properties.

The Columbine grows easily from seed and does not require a great deal of care after it has started to grow. These curious flowers are so different than many of our garden friends, that they lend variety to the garden. Nevertheless they are beautiful and there is a large variety to choose from. The Giant Long Spurred Yellow variety often grows five or six feet in height here in California. The color is the shade of ripe lemons, and they are larger than most of the others.

Other November Flowers

Sweetpeas, Pansies and Stocks still may be sown in many parts of the State. Sweetpeas and Pansies rejoice in cool weather, but not heavy frost.

Continue planting the hardy bulbs in November. If frosts are heavy, it is wise to protect the bulb-beds with a heavy mulch of straw. One cannot follow a definite routine in planting here in California. Our climate and soil conditions are so varied that gardeners in each locality must plant according to the rules applying to that particular region.

I have tried to interest the Orchard and Farm readers in flowers that do not require pampering. Most Orchard and Farm folks are busy and cannot spend the time required to raise the delicate plants. Yet everyone who has water for irrigation surely can spare a little time in the garden. When choosing flowers for the busy gardener, choose those that are not in continual need of pruning, picking and spraying. If you live in a locality where a certain variety of rose does well, and another variety does not, plant the variety that is best suited to your locality whether you like it better than the other variety or not. Follow the same course with every other flower.

If you have an unsightly back fence or a shed that needs covering, sow some wild cucumber seed this month. They should barely be covered, and sow about three times as many seed as you think you will need, as they do not germinate as readily as many other vine seeds. Yet, each seed that grows, in the spring, will make an unusually large vine, and will cover a large space in a very short time. The wild cucumber vine seed need the frosts of the winter and spring. This vine is especially adapted to our warm valleys and will grow in almost any soil.

The Gentle Grafter

Yes, Luther Burbank's wonderful; on that we'll all agree;
But he has overlooked some things, it's always seemed to me.
If I had Burbank's powers, say, I'll tell you what I'd do—
I wouldn't be contented with a gorgeous flower or two,
Or a stomach-ache-less apple or a double-acting prune,
Or a seedless macaroni. No, I'd sing a different tune!
I wouldn't waste my talents on these things that no one needs—
But make some new creations out of common plants and weeds.

The milk-weed plus the freesia would make the best ice cream,
And water-cress, if hothouse raised, would generate real steam!
Now it would be quite simple to develop cream-of-wheat
With the cow-slip and the wheat-grass. It would take the place of meat!
But if we wanted sausage or an order of ham-and,
With the pig-weed and the egg-plant there's material at hand.
The red-top and white-clover, crossed with blue-grass. (Here's good news),
If grafted on the common flag would give old glory's hues.

And Prohibition's mandates, 'twould be easy to evade—
A bit of rye—a dash of mint—Oh, boy! It's ready-made!
Cigars I needn't mention, 'cause your nose already knows
That there are other grafters. Hemp is not much like the rose!
An oyster cocktail? Simple! Just take oysterplant, you see,
And add a "stick" that you can cut from any handy tree!
But how about some cider? We'll provide for that I guess,
By working in some apples just before we go to press.

—*Justin Nutt.*

FREE TO ASTHMA SUFFERERS

A New Home Method That Anyone Can Use Without Discomfort or Loss of Time

We have a new method that controls Asthma, and we want you to try it at our expense. No matter whether your case is of long standing or recent development, whether it is present as occasional or chronic Asthma, you should send for a free trial of our method. No matter in what climate you live, no matter what your age or occupation, if you are troubled with asthma, our method should relieve you promptly.

We especially want to send it to those apparently hopeless cases, where all forms of inhalers, douches, opium preparations, fumes, "patent smokes," etc., have failed. We want to show everyone at our expense, that this new method is designed to end all difficult breathing, all wheezing, and all those terrible paroxysms at once.

This free offer is too important to neglect a single day. Write now and begin the method at once. Send no money. Simply mail coupon below. Do it TODAY.

FREE TRIAL COUPON
FRONTIER ASTHMA CO., Room 816X, Niagara and Hudson Streets, Buffalo, N.Y.
Send free trial of your method to:
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The Pride of Petaluma. . .

KRESKY'S 1920 VENTILATING brooder stove forces proper ventilation in spite of the operator and sweeps the room with FRESH AIR. PETALUMA'S latest sensation and result getter. TRY it. Keep it if you like it, or send it back if you do not.

Catalog No. 19 free for asking.

Kresky Brooder Stove Co.
PETALUMA CALIF.

FISH

Salmon in brine, 100 lbs., $11.00. Shipping weight, 165 pounds.

Smoked Salmon, 20 lbs., $3.40. Dried Codfish, 10 lbs., $1.75. T. A. Board, 4322 Winslow Place, Seattle, Wash.

RABBITS $6,000 YEARLY. Raise Furbearing Rabbits for us in your back yard, spare time. We furnish stock and pay $3.50 to $7.50 each for all you raise. SUNSET FUR CO., 5837 Lankershim Blvd., Los Angeles, Cal.

Good Advertising

Surrounded by a dozen sympathetic elders, a little boy was crying dolefully on the street corner.

"What's the matter, sonny?" inquired one benevolent old gentleman.

The lad surveyed the gathering crowd through half opened fingers; then, finally removing his hands from his eyes, said in a high, penetrating voice:

"Please, I'm lost. Take me home to the store of my father, Isaac Goldstengel, dealer in hats, caps, suits, furnishings, heavy-ribbed underwear and shoes, now selling at a great sacrifice."

Dry Humor

It seems quite certain that there will be much less rye mixed with the wild oats sown hereafter.

Gee, What a Scandal!

"What's the matter with the editor of 'The Agitator'? I just saw him running up the street about a mile a minute, with Fred Anderson after him."

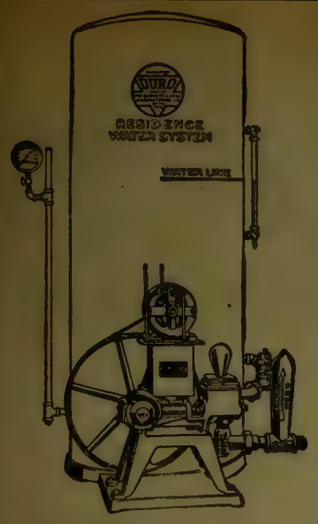
"I guess Fred is pretty sore. You see the 'Agitator' had an item about Fred's wife making a lot of money raising chicks, and the printer spelled it with an 'e' instead of an 'T'."

At the Restaurant

Mary had a little lamb—
But Cholly had a chill,
When Mary put the lamb away,
And Cholly paid the bill.

"Did Clancey really try to put yer eye out?"

"Sure. I don't know, Mike, but I'm dead certain he tried t' push it further in!"



Let "DURO" Do It

THE all-round water system for household use. Pumps either hard or soft water at a very low cost and furnishes it under pressure to any part of the house just like city water service.

"DURO" Residence Water Systems will supply the home, grounds, water the garden, stock, etc.

Strong, simple, quiet running and entirely automatic in operation.

Send for Duro Booklet

—which shows just how DURO lightens labor and brings city conveniences to country homes. Mailed free on request.

California Hydraulic Engineering & Supply Co.

69 Fremont St., SAN FRANCISCO. Dept. D, 420 E. 3d, LOS ANGELES.

We have some good Territory for Live Dealers.

Now Wrecking

2,000,000 FEET LUMBER

40% SAVING

New, full line of plumbing material, lumber, ranch accessories, electric fixtures, doors, windows, etc., at money saving prices. Satisfaction guaranteed or money refunded.

50 wardrobes, double door mirror, hardware complete, $7.50 to $10.00.

3 cars new mill goods.

Get our estimate on material for entire building.

SYMON BROS.

Wreckers

Block 11th & Market Sts., San Francisco.
21st & San Pablo Ave., Oakland.

Steel Mantle Burner

One Steel Mantle Burner Gives as Much Light as Three Common Burners.

REASON:

It converts Kerosene Oil into Gas and BURNS the Gas.

EQUIVALENT

Gives the MOST light per gallon of oil used.

RESULT

Transforms Old, Smoky, Dingy, Weak Lamps into Bright, Clear, Odorless, Powerful, Smokeless Lights. Equip your lamps and lanterns with Steel Mantle Burners—the perfect light givers. One Burner mailed free and postpaid any place in the United States with one year's subscription to ORCHARD AND FARM at 50 cents or three years at $1.00.

ORCHARD AND FARM Los Angeles, California

The Farmer's Wife

As she is pictured on the stage and—as she really is.

Quick Wit

Enraged Orchardist—"Here! What are you boys doing in my apple tree?"

Alert Spokesman—"You see, Mister, we belong to the Conservation Club and we came out to scare the birds away so as to protect your fruit."

The "Green" Hand

His Nibs (upon delivering some furniture to surprised manager's wife and finding that the laugh is on him)—"Well, how did I know he was talking about repairs for the wagon? He simply told me to go to town and get a new bed and bolster!"

The Real Rube

"I've discovered the real 'Hick,'" said Farmer Brown. "It's the $90 a week mechanic who's striking for a six-hour day and thinks he's going to make us raise his food for nothing."

The Foolish Farm Adviser

Solomon Smith, the all 'round expert, offers both consolation and good advice.

"What on earth's the matter, Joe?"
The Farm Adviser cried,
As Joseph Jones of Sandy Blow
Stepped gingerly inside
The office. With his bandaged head,
He looked quite like a wreck.
His arm was in a silken sling;
A bandage bound his neck.

He hobbled in on crutch and cane
And sat him gently down.
"Alas," he cried, "Such awful pain!
"Ten times they knocked me down!
"It was my mules," he added, "They
'Have ruined me for life;
"I might have known I'd rue the day,
"And listened to my wife!"

"It was a smooth-tongued salesman, bold
"Whose soft words sealed my fate.
"A marvelous chemical, he sold,
"I learned the truth too late!
"I was to rub it on my mules
"To keep away the flies.
"The world is full of crooks and fools,
"And smooth-tongued salesmen's lies."

"Well, never mind; the truth you've learned,"
The Farm Adviser said.
"It's thus that fortunes oft are earned.
"And now you've fought and bled.
"Be thankful that your shins were barked
"And not the orchard trees—
"That yours, and not their limbs were marked,
"And set your mind at ease."

"It's fortunate you lost your ears
"And not the ears of corn.
"So I'd advise you, quell your fears,
"And be glad you were born
"Beneath a lucky star. Suppose
"The cabbage-heads you've grown
"Had suffered from those sledge-like blows
"Instead of just your own!

"Ah, you should be a happy man!
"Your work was not in vain.
"Your crops are safe. And now you can
"Just laugh at all your pain.
"Remember, there are other men—
"If you should lose your life.
"But if the CROPS were ruined, what
"Would happen to your wife?"

—JUSTIN NUTT.

More Than a Yard Every Second

When You Use This Handy

MERRY GARDEN AUTO CULTIVATOR

THINK what it means to cultivate your crops at the speed of from 120 to 200 feet per minute—more than a yard every second! And not merely scratch up the surface, but really work down deep—five or six inches and within one-half inch of the plants—without the push, pull or bearing down that wears you out. That is the kind of service you get from the MERRY GARDEN AUTO CULTIVATOR.

Saves the Work of Three Men

Actual tests prove one man with a MERRY GARDEN does more work and does it easier and bettter than four men do with hand cultivators. It works uniformly without slighting a single row. Goes between wide rows and astride narrow rows.

Simple to Operate

The power is furnished by a reliable 2 h. p. gasoline motor controlled from the handles. Requires no pushing or pulling. Simply guide it along the rows. "It leads the way." When not used as a cultivator, the addition of a pulley frame furnishes power for small machine, such as the separator, churn, lawn mower, saw or grinder. Price of frame, $10 extra.

Sold on a Money-Back Guarantee

We allow a 5-day trial, backed by a rigid money-back guarantee. Order direct from this advertisement, as you are fully protected by this guarantee. If for any reason the MERRY GARDEN fails to do the work, purchaser in accepting same agrees to notify us within 5 days from receipt thereof. We reserve the right to send a demonstrator, and if machine fails, purchase money will be refunded. Price $185.00, f. o. b. Cleveland, Ohio. Terms 10 per cent, or $18.50, with order. Balance on delivery, with privilege of examination subject to five-day trial and guarantee. Shipping weight 250 pounds. For further information and particulars, address

THE ATLANTIC MACHINE & MFG. COMPANY
448 W. Prospect Avenue
Cleveland, Ohio

Wanted: Live Wire Representatives in all localities

The Atlantic Machine & Mfg. Co.
448 W. Prospect Ave., Cleveland, O.

Gentlemen: Find enclosed $18.50 for which ship the Merry Garden Auto Cultivator, balance to be paid on delivery. This order is placed subject to the terms of your money back offer.

Name .....
Address .....
Town ..... State .....

(5)

When answering advertisements please mention Orchard and Farm.

TWIN CITY

12-20 Kerosene Tractor with 16-valve engine

A proven and tried product, strikingly simple, thoroughly accessible, already subjected to gruelling farm service—embodying exclusive features never before applied to tractor use:

The 16-valve engine (valve-in-head type) with removable cylinder sleeves and counterbalanced crankshaft. Bosch High Tension Magneto ignition.

Sliding spur-gear transmission, two forward speeds, **direct drive on both.**

Write for complete details NOW.

Immediate Delivery.

Frank O. Renstrom Co.

550 Van Ness Ave., San Francisco.

Sacramento, Stockton, Los Angeles.

Portable heat-
convenient - economical

At the light of a match—instant heat. No smoke, no odor. Comfort without dust or dirt. Oil consumed only as needed.

Pearl Oil is refined and re-refined; pure and clean burning. Sold in bulk and in five-gallon cans. Order by name—Pearl Oil.

We recommend Perfection Oil Heaters.

STANDARD OIL COMPANY
CALIFORNIA

Send For This Free Catalog

ROEDING TRUE TREES FRESNO, CAL.

TREE PLANTERS

The Fancher Creek Nurseries have played an important part in the production of fruit in this State. For 35 years we have made it our business to grow "True Trees," vigorous trees, well-rooted trees, trees that would bear.

Thousands of fruit growers owe their success to the fact that they planted "Fancher Creek" trees.

A SUGGESTION

A larger acreage should be planted to Nectarines. They are fine for either drying or shipping.

Apples
Pears
Peaches
Figs
Apricots
Olives
Almonds

Fancher Creek Nurseries

701 Holland Building, Fresno, California

YOUR SOIL NEEDS

HUMUS AND NITROGEN BACTERIA.
MELILOTUS INDICA SUPPLIES BOTH.
Now is the time to plant it. Buy your seed from
AGGELER & MUSSER SEED CO
620 S. Spring St., Los Angeles, Calif.

Buy only Melilotus seed that has a quality tag on each sack. It protects you against the low germination seed so general on the market this season. This seed is above 99% pure and above 80% germination.

Spring field-Remington $7.77

Single shot rifle altered and refinished. Shoots cal. 30, model 1906 army cartridge. Weight 7½ lbs., total length 39 inches, U. S. Barrel 23½ inches Remington breech action, blued finish U. S. graduated sight. Price $7.77. CARTRIDGES $3.50 Per Hundred packing charge 45 cents.

FRANCIS BANNERMAN SONS 501 BROADWAY, N.Y.

High-grade vulcanizing, large stock of new and used tires. Write for price list.

R. B. TIRE REPAIR SHOP (Inc.)
1049-51 So. Main St.
Los Angeles

About Contests

CONTESTS, which are a part of the boys' and girls' club work, are a strong influence in bettering agricultural conditions. In Potter Valley, Mendocino County, Calif., a boys' and girls' pig club was organized last year, and as a result of the work carried on there are now 11 new purebred boars in Potter Valley. No record has been made of the number of purebred or better-bred sows which have been brought in. The adult farmers in the community have become so interested in the contests of the club members that now they have organized a pig-feeding competition among themselves.

In Kings County, Calif., it is the custom to sell hogs almost entirely through public auction sales. Falling in with the spirit of club contests, five communities in Kings County have each undertaken to raise a carload of hogs. These hogs will all be sold at auction but, previous to the auction, they will be judged and a prize given to the community or farm center which has produced the best carload. In addition to the centers, the boys' and girls' clubs in the county will undertake to produce a carload of hogs in competition with the adult farmers and compete with them for the prizes offered for the best carload. Competition of this kind induces a spirit of friendly rivalry and stimulates the interest of both old and young in community betterment.

Parting Time

Many club boys and girls become so fond of the animals they have raised that they find it hard to carry out their original intentions of disposing of them to increase their bank accounts or to buy thrift stamps. One 11-year-old girl who had cared for her prize pig for nearly a year vented her feelings in verse:

I didn't raise my pig to be a bacon:
I brought him up to be my pride and joy!
And now that he must die, my heart is achin';
I did as good a job as any boy!

One small boy who, with mournful visage, led his pig in a thrift stamp parade, displayed on his prize animal a sign which read: "I'm going to die for my country; what are you going to do?"

One Girl's Plan

In the autumn my little sister and I gather the long, beautifully-shaped acorns which grow in California. We shellac them, punch holes through the large end and mail them to dressmakers in the East, who use them for decorations in place of buttons. They are used upon some of the most artistic gowns. This season we have sold $37.55 worth already. I think it is easier to sell these now because buttons are so scarce and high priced. The acorns I refer to are the horn-shaped ones.—Ettie Yager, Folsom, Cal.

Up-to-Date

Tom, Tom, the farmer's son,
Bought a pig and home did run.
The pig grew big and sleek and fat
And now Tom has a new suit and hat.

Pig Club Success

Clarence Sellers, a 14-year-old boy of Sedgwick County, Colorado, started out right in a pig club. He bought a registered weanling Duroc-Jersey gilt, and his judgment in selecting a good pig was shown when his sow, "Stateline Duroc," developed into an animal of excellent show ring type.

Her marvelous growth and thick velvet covering of flesh spoke well for the feed and care given her. This sow entered the ring at the Denver National Western Stock Show as a senior pig weighing 350 pounds, smooth as velvet, with lots of length, height, bone and vigor.

The initial cost of the pig was $18, and the cost of her feed was $30; the premiums won totaled $35, and the present value of the sow as a breeding animal is reckoned at $125.

How to Make Money

We have a number of interesting letters from boys and girls this month, telling how they have made money for themselves. Two of them are printed on this page, and we are sending FOUR THRIFT STAMPS to each of the fortunate winners. Would not you like to earn some thrift stamps? All you have to do is to write the Editor of Orchard and Farm (Los Angeles) a brief note, giving the details of your plan. If it is original and your letter is well written, it will be published and you will immediately receive FOUR THRIFT STAMPS. If you have no unusual plan, write an interesting letter about your experiences in Club work.

Here is a letter received this month from a Sacramento boy:

Money From Junk!

"I live on a large farm near Sacramento. I was talking to a boy I know in the city one day and he told me the junk buyers were paying more for old bottles, iron, etc., than ever before. I thought about all the old stuff around the farm that had either been dumped in the gulley or piled in out-of-the-way places, so one Saturday I got my father's permission to take the spring-wagon and one horse and gather up everything I thought I could sell. Well, to my surprise, I actually filled the wagon that day and had not nearly picked over everything. My father made me take out some of the pieces of machinery that he thought might be good for repairs, but he let me take most of it to town, and I got $4.75 for the load. The next Saturday I got all the bottles and also some old sacks and a lot of bones and made over $3. The best part of it was that my father said I had improved the appearance around the buildings so much, he thought it was worth a dollar, which he gave me besides the use of the horse and wagon. I think other farm boys and girls living near towns and cities could do as well.—Clarence Shotman.

HERE'S A SUGGESTION!

The Circulation Manager of Orchard and Farm has an interesting proposition he would like to make to any live, wideawake boy or girl. He will show you how to make extra money in the easiest and most pleasant way. It won't do any harm to find out what his plan is. Drop him a line. Just address Circulation Manager, Orchard and Farm, 1111 South Broadway, Los Angeles, and say: "Please send me your plan for making money." Sign your full name and address and tell him your age and whether you live in town or on a farm. Write today and you can make extra money for Christmas!

Possibilities in a Cheese Box

A COMMON round cheese-box, with four pieces of dressed pine, 1x2 inches by 3 feet long, and a small can of dark brown varnish composed the parts necessary for the construction of a handy little stand.

It looks well enough to sit in the parlor with real mission "installment plans," or it is obliging enough to hide three weeks' mending in the depths of the box; again, it is strong enough to hold a heavy house-plant in the top, which was originally the lid of the cheese-box before its "graduation."

The cheese-box stand is so easily moved about that the mender can carry it out to the porch to do her mending as easily as she can carry an ordinary basket. Then, too, she has the top of the box for her needles and thread and scissors, which is much more convenient than rumpling through numerous sox and other wearing apparel that must be mended. My mother declares that the cheese-box stand is so convenient and so easily constructed that every house-wife should have one. She, very often, uses her cheese-box stand at the side of her bed to hold a reading lamp.

The four pieces of pine are used for the legs of the stand. They go "up through" the box on the inside and are nailed with small finishing nails. The legs could be nailed to the outside of the box and lid, but the stand looks much neater with them on the inside. Small openings 1 by 2 inches must be made for this, in both the lid and the box itself. The openings can be cut with an ordinary jack-knife, and there is no danger of splitting the wood, as the cheese-boxes are constructed of tough material. The lid of the cheese-box is used upside down for the top of the stand. This makes a convenient tray in itself. The top of the stand is 12 inches above the lower section. Before giving the stand its finishing touch of varnish or stain, it is necessary thoroughly to clean off any spots. These are usually grease spots, and varnish or stain will not hide them.

For Raising Chicks

Another use which I found for the cheese-box was that of a fireless brooder for baby chicks. Any woman can make one, and for those who wish to raise only a few chicks, I think the cheese-box brooder is excellent. A cheese-box brooder will hover from 15 to 20 baby chicks as long as they are in need of protection. Every baby chick that I put into my little cheese-box brooder grew up to be a fryer or a layer. The round box prevented them from getting into a corner and crowding, which is one of the worst features of most fireless brooders.

I used the cheese-box itself (upside down) for the brooder, and the lid for the bottom. The lid was kept sprinkled with sand, and each day emptied; thus the chicks always had a clean floor. Needless to say, the cleaning of the little brooder was reduced to a matter of a few seconds. I tacked narrow strips of wool flannel to the top of the brooder about an inch apart. These strips of flannel almost touched the bottom of the brooder and gave the chicks the necessary warmth. Air holes at the top to let the foul air escape and three or four air holes at the bottom of the sides of the brooder to let the good air in, were provided. A tiny door was made of the lid of an old cigar box and swung on a hinge. The opening was four inches square.

I found my little cheese-box brooder to be just the thing when I wished to raise only a few chicks at a time. I had better success with only a few chickens together than with fifty or a hundred in the larger brooders. Nearly everyone who has a back yard or a farm could, by means of this device, have a few fryers and a few pullets without the expense of an expensive brooder. Then, too, the sturdy little cheese-box brooders will last for years, if they are put away when not in use.

Other Unique Uses

I have seen other cheese-boxes that serenely graced the shelves of the neat housewife's kitchen and pantry. They were painted to match the woodwork and were used as containers for meal, beans and sugar, while another one was used as a bread box, this being made more convenient by means of a strap-handle fastened in the center of the lid.

A friend of mine uses a cheese-box containing three or four air holes for a lunch box when making an automobile trip. If they have a "machine full," one of the children uses the lunch box as a seat.

I have a cheese-box that is entitled to two distinct diplomas for usefulness, and I'll have to confess that it is neither painted nor varnished. I let it rest on the floor of the clothes closet. Inside, I keep the children's good hats and caps and on top I keep their good shoes. Every one knows how unpleasant it is to have shoes under feet in a closet, and I find the cheese-box keeps them out of the way; then, too, the children can get their own shoes and hats when they are getting ready to go out. One really must live in small quarters thoroughly to appreciate the usefulness of a common old-fashioned cheese-box which has "graduated" into a higher plane of existence.—Helen Rebecca Temple.

Uses of Soap Bark

Soap bark is excellent for washing dark woolens which might streak or fade with ordinary soap (sailor suits and middy blouses, for example). It may be purchased cheaply at a drug store. Make a solution by boiling one cup soap bark (about three ounces) and one quart water for five minutes; cool, strain, and mix with wash water like ordinary soap solution; or put the soap bark into a small thin bag and soak and squeeze it in the wash water. A little soap bark used in the rinse-water gives the goods a slight stiffness.

Currant jelly beaten up and thoroughly mixed with water makes a pleasant beverage, especially as the basis for a fruit lemonade.

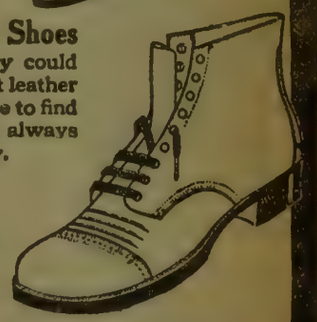
Either cayenne pepper or gum camphor is said to repel mice.

Mayer HONORBILT SHOES

MILWAUKEE Mayer CUSTOM MADE HONORBILT

For the Whole Family

DRESS up shoes for everybody, work shoes, school shoes for the children and easy restful house shoes. *Honorbilt* Shoes contain the same good quality leathers they did 38 years ago; they are *built on honor*. The name *Honorbilt* stands for a heaping measure of service. Wear a pair and prove it for yourself.

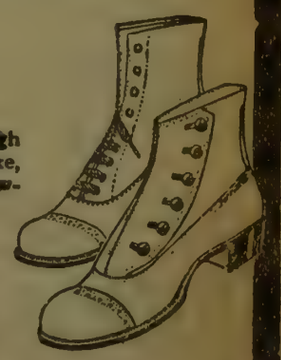


Men's and Women's Fine Shoes

The fine shoes are all that anybody could ask for in style and you get choicest leather plus genuine comfort. You are sure to find the particular shape you want and always the latest styles, and a wide variety.

Work Shoes

Honorbilt Work Shoe leather is double tanned to resist the alkali in the soil, as well as barnyard juices. They are soft and easy on the feet yet long wearing and will not get hard when wet. Honorbilt Work Shoes will give double the wear of ordinary shoes.



Children's Shoes

Sturdy, well-built shoes that stand rough treatment—the kind boys and girls like, and their parents, too. Shaped for growing feet. The quality is there—*they wear like iron.*

No matter who in your family needs a pair of shoes next, see your dealer who handles the Mayer Honorbilt line. Look for the name *Honorbilt* on the soles.

F. Mayer Boot & Shoe Co.
Milwaukee, Wis.

If you have something to sell or trade, why delay? A small classified ad in Orchard and Farm will complete the deal. The cost is small.

UNION SURE GRIP TRACTOR

12 / 25

Model D

Meets the demand for a tractor to do all farm work.
UNION TOOL COMPANY, TORRANCE, CAL.

PRINCE ALBERT

Toppy red bags, tidy red tins, handsome pound and half pound tin humidors—and—that classy, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

PUT it right up to Prince Albert to produce for you more smoke happiness than you ever before collected! P. A.'s made to fit your smokeappetite like a glove. It has the best flavor and coolness and fragrance, ever!

Just what a whole lot of joy Prince Albert really is you want to find out the quickest way you know how! And, put it down how you could smoke P. A. for hours without tongue bite or parch. Our exclusive patented process cuts out bite and parch.

Realize what it would mean to get set with a joy'us jimmy pipe, or the papers and to fill 'er up every once and a while. And, puff to beat the cards! *Without a comeback!*

Just as sure as you're reading this, P. A. will hand you everything you ever yearned for in tobacco joy! Why, it's so good you feel like you'd just have to eat that fragrant smoke!

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

MICA AXLE GREASE

No hot boxes

Mica Axle Grease contains powdered Mica, which fills up all roughness in spindles and bearings, makes the grease work better and last twice as long. Easier pulling. Forms a cool slippery coating that resists wear and pressure. Ask your dealer. Buy by the pail.

STANDARD OIL COMPANY
(California)

POTTENGER & POTTENGER
Suite 628-29-30 Exchange Building, 3rd and Hill Streets

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SYSTEM
in shop office and field

Concerning "Blow Soils"

GEORGE CRANDALL, a "desert farmer" subscriber, gives the following helpful suggestions on how to act when your farm shows signs of moving over into the next section or old Boreas apparently becomes determined to bury your crops under tons of shifting sand:

When a soil begins to blow, prompt and immediate attention must be devoted to its control, as where a short delay occurs the area affected may spread until much damage is done. An efficient control consists of spreading straw or manure over the affected area as soon as the blow is discovered, beginning on the windy side of the field and working with the wind.

The straw may be held in place by running a disc harrow over the area strawed, the disks of the harrow being set perfectly straight.

By cultivating with a spring-tooth harrow, shovel cultivator, or meadow row drill, blows may be controlled in their early stages, the implements being driven at right angles to the direction of the prevailing wind in order to let the drifting sand fall into the furrows. However, if there are no clods to be brought to the surface, such cultivation will do little or no good. Land that has been blowing for some time may be controlled by plowing furrows across the affected area at right angles to the direction of the prevailing wind, the furrows being from one to two rods apart, thus operating to catch the sand and keep it from traveling on the surface of the ground.

The use of chisels instead of plows, or plowing with the mouldboard removed, so that trash and litter will remain upon the surface of the ground, is a practice recommended under certain conditions. The use of any implement tending further to pulverize the soil only increases the trouble.

Shop Helps

One industry which is growing by leaps and bounds is the production of "irons" and parts for making gates, hay-racks, grain beds, garage and barn doors and other ranch equipment. The farmer purchases the metal parts and from bills of material furnished with them, cuts the lumber as necessary, making up the finished product at a considerable saving. These "sets" are now offered for sale by many hardware dealers.

One of the best reasons for weed control is the fact that many of our most harmful insect pests live and feed upon the common weeds.

Dry Farming Pointers

A Stockton subscriber, R. E. Housman, in commenting upon Hardy W. Campbell's system of agriculture, as outlined in articles in Orchard and Farm and also in his book which we are distributing (see advertisement in this issue), inquires whether the use of a track-laying tractor would not pack the soil, prepared according to the Campbell system.

Mr. Campbell points out that while it is possible to make a heavy soil too solid by going over it when it is very wet, there would be no danger under ordinary conditions, providing a mulch of two and one-half to three inches were maintained after the tractor had passed over.

Mr. Campbell's articles have provoked much discussion on the subject of deep plowing. He does not advocate deep plowing except where a heavy rainfall is common or where irrigation is practiced. His contention, as pointed out in a reply to A. Urquidi, an Alpaugh subscriber, is that there is no mechanical method of settling or "firming" land plowed over seven inches deep, and that if the lower stratum of the furrow is loose, prolonged drouth will injure the crop.

Storing Vegetables

Commercial crops of vegetables are, of course, stored in specially constructed pits or cellars, but the home gardener may keep many vegetables very satisfactorily without this special equipment. A good storage-place may be made by partially burying a wooden box or a large barrel on its side in a well-drained spot in the garden. Irish potatoes, carrots, parsnips, salsify, turnips, beets, and winter radishes can be stored in this manner. Cabbage, as a rule, can be stored to best advantage by burying it in the ground, while celery can be placed in a trench and covered with boards and straw or leaves, with an outer layer of soil to keep out frost. Sweet potatoes should always be stored in a warm, dry place, such as a room over the kitchen where there will be plenty of both heat and ventilation

Young Hens Best Layers

There are people who have the right variety of fowls, who house and feed them properly, and yet who can not obtain eggs early in the winter because their fowls are too old. It is seldom that it pays to keep hens for laying after they are two and a half years old; not that they will not give a profit, but because younger fowls will give a greater profit.

How to Estimate Tonnage of Hay

For hay in mows determine the number of cubic feet by multiplying the width by the length by the height. Divide this figure by the approximate number of cubic feet to the ton obtained from the table below.

Height of Hay	30 Days in Mow	60 Days in Mow
10-12 ft.	600 cubic feet in ton	500 cubic feet in ton
12-15 ft.	500 cubic feet in ton	400 cubic feet in ton
15-20 ft.	400 cubic feet in ton	350 cubic feet in ton

For hay in ricks or stacks multiply length by width by overthrow (distance from ground to ground over sides of rick) times .31 and divide by number of cubic feet per ton.

Of course, these rules cannot be relied upon for absolute accuracy, as so many factors must be considered. But since hay must frequently be measured in the stack or mow, figures of this kind are accepted as a basis for sale or trade.

How We Conquerd Melon Aphis

By George Gautier

MY MELON patch became infested this fall with myriads of green aphis. They almost captured my 20-acre field. Millions and millions of them were working day and night, sapping the very life out of the plants.

These pests rob the vines of their vitality and nourishment. I know this to be true because the leaves and tender stems turn black wherever the aphis work. Then the plants droop over and become as dry as tinder. It is not long before many vines are dead.

In such a case something must be done and done quickly. It occurred to me that I might counteract the

loss of plant-juices with a generous irrigation. Accordingly, I instructed my men to give the field a thorough soaking. For 36 hours they threw on all the water the soil could take. But I perceived no appreciable improvement in the condition of the plants. The drooping ones continued to droop. Half the patch became dry and gummy. If anything, the plague was increasing in virulence. It was, moreover, spreading alarmingly. I noticed, too, that many of the melons were turning black. Although this condition does not penetrate the net, or rind, of the melons, I am convinced that the quality of the fruit is injured. At any rate, the appearance is spoiled and that injures sales.

Seeking expert advice, I was told to spray. A number of solutions or mixtures were suggested and vouched for as being sure death to the offending insects. From the list of "dopes" offered, I selected one at random, persuaded that it was the one "contact insecticide" that would do the work. Next, I purchased several sprayers, the kind which, equipped with a bicycle pump, throw a fine mist. These, I knew, would involve less work for the men than the small hand sprayers.

I was now prepared for the onslaught. First I read the directions. The written word, like the salesman, emphatically assured me that the preparation meant certain death for the little offenders. However, I was puzzled by these sentences: "When spraying melons, be sure to hit the underside of the leaves"; and, "Remember that only the aphids struck and soaked with the solution will be destroyed."

This bit of information reminded me of the time-worn joke about the patent-medicine man and his wonderful preparation for destroying fleas, the instructions for which commenced: "First catch the flea."

The aphids live and work mostly on the shady or under side of the leaves. In fact, the very leaves they destroy act as umbrellas for them, sheltering them from the hot sun and turning away moisture. To destroy them it would indeed be necessary first to catch them. This could only be done by turning each leaf over and spraying it. For some reason the directions failed to tell how this could be accomplished. The most simple and obvious way to do the job, it appeared, was to turn over each leaf by hand! But imagine turning over 20 acres of melon leaves in this manner!

Presently, as I was pondering on the problem, one of my men came in from the field with a strange device in his hand. It did not look like any agricultural implement with which I was familiar, resembling more than anything else, a broiling-rack with a hoe-like handle set at an angle. It was made entirely of wood. The rack was about 26 inches wide and 18 inches long. There were six 26-inch parallel bars placed at intervals of 3 inches. The handle was attached to the hindmost bar, and set at about the angle taken of a carpet sweeper handle. The device weighed only about two and one-fourth pounds.

"Boss," said he, "I think I've found a way to turn the leaves over." We went out to the patch at once. Jim carried his spraying can on his back. With his left hand he manipulated his "broiling rack" and in his right, held the nozzle and hose of his sprayer. On reaching the patch, he selected a healthy, green melon vine on which to "try out" his invention. He thrust the rack over the leaves until most of them projected through the parallel bars. Then he drew it towards him, perhaps two or three inches. With this motion all of the leaves were bent forward and over, exposing the under sides and show-

ing entire new colonies of aphids. Then Jim brought his sprayer into play with his right hand. Eureka! The bugs had been conquered.

He then put his broiling-rack through a series of contortions. It worked admirably in a dozen different ways. He could pull or push over the leaves or gather a number of runners together by turning his rack upside down. He was thus able to expose almost half the leaves of a vine at one sweep. It was not long before he could manipulate his contraption with surprising ease and deftness.

I then had Jim build a broiling rack for each of the men. And they soon learned to use them with equal adroitness. As a result of this display of practical inventive genius we had the aphids under control in a little more than a week.

Durable-DURHAM Hosiery is a product of industrial democracy—never of Child Labor. We have no strikes or lockouts.

DURABLE DURHAM TRADE MARK HOSIERY

Full of warmth and full of wear

HERE is comfort for cold weather. Durable-DURHAM fleecy-lined Hosiery *is* warm, and because of this it is the sensible hosiery for winter wear. Every pair has soft, thick, fleecy lining. They have the strength to give long wear—and stay good-looking through many wearings and washings.

Durable-DURHAM Hosiery includes not only Fleecy-lined but other styles for every member of the family—for work, dress, or play—for every season of the year. The children's stockings are made doubly strong to stand the hardest wear and tear. Styles for men and women include all fashionable colors and come in all weights from sheer mercerized to the heavy fleecy-lined.

Every pair is extra strongly reinforced at points of hardest wear. Legs are full length; tops wide and elastic; sizes are accurately marked. Soles and toes are smooth, seamless and even. The Durham dyes will not fade.

DURABLE
DURHAM HOSIERY
FOR MEN, WOMEN AND CHILDREN
MADE STRONGEST WHERE THE WEAR IS HARDEST

Ask for Durable-DURHAM Hosiery and look for the trade mark ticket attached to each pair. You should be able to buy it at any dealer's. If you do not find it, please write to our sales department, 88 Leonard Street, New York, giving us the name of your dealer.

Durham Hosiery Mills, Durham, N. C.
Sales Office: 88 Leonard Street, New York

MODEL 20

THE Martin

Look for this mark on the ditcher you buy. It is our guarantee of satisfaction TO YOU!

Take the Toil Out of Ditching

When carried on in the usual manner—plow, scraper, pick and shovel—ditching is a tough job. Many thousands of the country's best farmers have found an easy, quick and economical way. The purpose of this ad is to get in touch with those who still dread the job.

The "MARTIN" is the easy way

It does the work of many men; it does a better job in far less time. It is a simple, all-steel, reversible and adjustable implement, built to last a lifetime. Works in any soil, wet or dry, hard or soft, on hillside or level. Has many other uses other than ditch-making and cleaning.

Horse and Tractor Sizes Catalog, with full particulars, sent free. It contains a wealth of information on better ways to ditch. Address

OWENSBORO DITCHER & GRADER CO., Inc.
1591 Waxee St. Denver, Col.

PLANT THE RIGHT SEED AT THE RIGHT TIME

Plant the right variety for your purpose, whether you are growing for home or market, or whether you are growing for cattle, horses, hogs, goats, rabbits or poultry.
See the 1918 Catalog of the

Aggeler & Musser Seed Co.
620 SOUTH SPRING STREET, LOS ANGELES.

The Land of Opportunity

NORIA, SONORA, MEXICO

Where you can buy land which is much more productive, where crops are a certainty and where all general farming crops can be raised, including fruits and vegetables, under delightful climatic conditions equal to those of Southern California. Why pay from one to three hundred dollars per acre for farm lands when you can get this highly fertile land at

$10 TO $17.50 PER ACRE—TERMS

The land is part of a 50,000-acre tract right on the main line of the Southern Pacific Railroad.

Cheap Labor, Large Crops, Good Markets and Convenient Rail Facilities Make This an Attractive Investment

Investigations are now being made by a thoughtful investing public who are just realizing that an acre of land on the railroad and near water transportation that will produce 30 bushels of wheat, a good crop of corn, beans or rye or a good crop of vegetables in a land of cheap labor—and in an incomparable climate—has a value, and that it will, in a few months, not years, advance in value more rapidly than lands in the United States of less producing power. These crops do not have to be sold in the United States, because the United States exports these commodities into Mexico; hence the farmer in Mexico, owing to the fact that he has a ready market at home, gets a much higher price for everything produced by him. Call at our office and you may see specimens of the products grown on this land. Then take a trip with us and see the land.

Sonora Valley Land Co.,

416 California Bldg., Los Angeles.

Mail the Coupon Today and we will send you our 28-page FREE BOOKLET containing 16 illustrations of actual scenes in Sonora Valley, also map and complete descriptions of land and conditions with letters from owners.

Name .....

Address .....

YOUR OPPORTUNITY

$136.00 IN PRIZES

Would you write a letter for $25—or $20—or even $5? In order that as many as possible of our subscribers may take advantage of our Prize Contest, we have decided to extend the offer to **JANUARY 1ST.**

Write us about any time or money or labor-saving method or scheme which has made your ranch more productive or your management more efficient. Write us about your experiments and conclusions with fruit, poultry, field crops, livestock, garden or, in fact, any branch of food production. Tell what you did and how you did it. Send photographs or diagrams if they will help to tell the story; they are not required, however. We want plain, unvarnished, straight-from-the-shoulder facts that will hold inspiration for other readers and help them to make more money and improve their living conditions.

PRIZES

FIRST	$ 25.00
SECOND	20.00
THIRD	15.00
FOURTH	10.00
FIVE PRIZES of (each)	5.00
SEVEN PRIZES of (each)	3.00
TEN PRIZES of (each)	2.00
TOTAL	$136.00

You don't have to be a writer to enter this contest. Every farmer is an inventor and experimenter. Just take a few minutes to set down on paper some of the short cuts or good ideas that you use in your everyday work and you may win a cash prize.

Write on one side of paper only, and sign name and address plainly.

Any number of contributions accepted from each contestant.

Articles limited to 1000 words, but the shorter the better, if you tell the whole story.

Address Editor, Orchard and Farm, Examiner Building, Los Angeles, and mark your letter "For Helpful Hints Contest."

The best contributions will be printed. All will be examined at the end of the stipulated period by a committee of competent judges, authorities on different branches of agriculture, and checks will be mailed to the winners, whose names will be announced in the issue following. Why not do this NOW?

ADDRESS ALL CORRESPONDENCE "HELPFUL HINTS EDITOR."

ORCHARD AND FARM EXAMINER BLDG., LOS ANGELES.

How Stockmen Increased Profits

BETTER METHODS OF PREPARING, SHIPPING HIDES

"I DISCOVERED a leak in my profits when I investigated the proper methods of preparing for sale or shipment the hides of animals dying or butchered on the ranch," writes an Arizona subscriber.

"I now prepare all skins according to the suggestions of the United States Department of Agriculture, and have found that they do not deteriorate and that I always have them graded high and receive the best market price."

The farmer who has thoroughly cured a number of hides and skins by the green salting method commonly followed should place them over some elevated object, such as a barrel. They should remain there over night, to drain free of excess moisture, after which the surplus salt should be swept off or removed by thoroughly shaking the hides. If the hides are handled in this manner, and thoroughly cured before being shipped, the shrinkage should be relatively small. If the hides are not thoroughly cured, if they have been in salt only a day or two before shipping, do not remove any of the salt as the hides may spoil.

Folding the Hides

As a rule hides are folded so that the hair side is out. It is essential to fold in the head and neck on the body of the hide, flesh surfaces together, and to turn in the tail in a similar manner. Then a narrow fold on each side should be made by throwing back the body edges and legs upon the body of the hide, flesh surfaces together, keeping the lines of the folds parallel. The legs should then be folded back and lapped with the hair surfaces together, bringing the break of each fold near the middle line of the back. The side folds should then be completed by bringing together the two breaks of the folds, with the middle line of the back as the main fold, in this way making one long rectangular bundle.

The butt end of the folded hide should then be thrown forward about four-fifths of the distance to the neck fold, whereupon the forward portion of the bottom lap should be folded back on top of the first fold, bringing the break of the rear fold even with that of the fold just made. This sounds complicated, but the directions may easily be followed if you take a sample hide and follow each step.

Each hide should be bundled separately and tied securely, about seven feet of strong cord being necessary to tie one hide bundle. A soft rope or line at least one-fourth inch thick is suitable for this purpose, although regular hide rope is preferable. Wire should never be used, as it is likely to damage the hide by rusting. Calf skins should be folded in the same manner as cattle hides. However, when more than one is to be shipped two folded calf skins should be placed together and tied into one bundle instead of tying each one separately.

Sheep skins are bundled differently from either cattle hides or calf skins. The wool sides are laid down and the skins are folded along the median line of the back with the wool side out. As many as five skins folded in this manner can be placed in a single bundle for shipment. It is not advisable to pack more than this number in one bundle, as the wool helps to generate heat very rapidly.

Two pieces of stout rope should then be wound around the pack from back to belly, one passing around the back portion just in front of the hind legs and the other passing around the front portion immediately back of the fore legs. All bundles should be tied securely, using the nautical bowline knot, as it does not slip easily.

Bundles often become untied or otherwise lose their identification marks, in which cases the railroad employes have no means of determining the identity of either shipper or consignee, especially if there are other hide shipments in the car. All shipments of hides should be tagged with good, strong linen tags with a paper finish and brass eyelets, and all addressing should be done plainly with moisture-resisting ink. Hides and skins should be shipped as soon as possible after bundling, without needless exposure to sun, draft, water or rusty or corroded metals.

(Farmers' Bulletin No. 1055, which may be had free from the Division of Publications, Washington, D. C., gives a great deal of useful information on this subject.—Ed.)

GETTING AHEAD OF THE DROUTH

DURING the severe drouth which has menaced Arizona cattlemen during the past two years, at least one large outfit in that State has been successful in taking the calves and old cows off the range and fattening them on the ranch.

E. C. Caveness, manager of the Burnut Ranch on the Phoenix-Glendale road, has fed out about 1200 calves in each of the last two winters. The average age at the beginning of the feeding period is about six months, with the extremes running from five to eight months.

When brought in, calves usually average slightly under 400 pounds and are fed for a period of about 150 to 160 days, in which time the average gain is close to two pounds per day. These calves begin on a ration of all of the ensilage they will eat and all of the chopped alfalfa they care for, supplemented by one pound of cottonseed meal and one pound of ground barley and milo.

About each week the grain is increased three-fourths of a pound until a total of around eight pounds per day per head is fed. The meal is increased gradually to about two pounds per day.

Last winter the old cows were fed about twenty-five pounds of cottonseed hulls per day supplemented by one pound of ground grain and a pound of cottonseed meal, with two or three pounds of chopped hay fed once daily. The meal and grain were increased gradually to about four and one-half pounds of each.

It is likely that this year's feeding operations on the Salt River Valley plant will be confined mostly to yearlings and old cows, since the range is very good and most of the cows will probably come through the summer in good shape for the calves to run with during the winter.

Mr. Caveness is a firm believer in ensilage and also in variety in rations. His project has been carried through in the Salt River Valley in the face of the opinion of a number of people, that range stock will not make satisfactory gains on concentrated feeds. He has found at times some little difficulty in starting a good rate of gain on calves which have been starved on the range, but has made a success of feeding even these animals.

Care of the Doe

APPREHENSION and fear should have no place in the mind of the goat-breeder during the pregnancy of the does. It is needless to borrow trouble over a process which is normal and natural. Furthermore, the state of mind of the caretaker actually is transmitted to the goats and their attitude towards him depends largely upon it.

"The thing I greatly feared has come upon me," may well be applied to the business of the goat-raiser. The mental attitude of worry has a depressing effect upon the doe; I know this to be true through long observation. Why suffer with apprehension that kidding time may bring misfortune and loss? Pursue common sense methods and meet conditions as they arise.

Have a yard where the doe can walk about, and during the last six weeks or two months leave her by herself, where she will not be called upon to defend herself against some obstreperous companion. Be sure she has plenty of fresh water and hay. Do not feed too much grain; a little is necessary, however, for we should remember that she must feed two bodies instead of only one.

Towards the last, give warm mashes with a very little grain and about two tablespoonfuls of oil meal. This last ingredient helps to supply the system with fat, which is necessary in delivery, for the semi-movable joints of the pelvis become quite mobile at this period. This change is due to a fatty infiltration into the cartilages, and the fatty ingredient in the food will facilitate this use of fats. This is an important point, overlooked by many goat fanciers.

Do not tie the doe unless absolutely necessary and never for long at a time. See that she has salt and as much green feed as is available. In case of bowel trouble, feed lightly for a few days, omitting grain entirely if necessary until normal action is established. Do not use drugs except in extreme cases. The action of cathartics is only to stimulate, and the after-effect is one of depression, resulting in no permanent benefit.—J. F. Farmer.

The International

THE pure bred livestock of the Middle West will come into competition with the prize winning herds of the Pacific Coast at the California International Livestock Show to be held in the California Building at the Panama-Pacific Exposition grounds, San Francisco, November 1 to 8, entries for which have exceeded expectations.

The Pacific Coast for a number of years has been a strong contender at the Chicago International and other livestock shows in the Central West and the favor will be returned by the Middle West at this show. More than $36,000 in premiums have been offered for cattle, horses, sheep, swine, poultry, rabbits and dairy products.

The California International is being instituted by an organization of San Francisco business men interested in the advancement of pure bred livestock. W. T. Sesnon is president of the board of directors. The University of California has loaned Professor Gordon H. True, head of the Animal Husbandry Department, to manage the show.

Provisions have been made in the California Building to accommodate more than 1000 head of livestock and a big arena has been constructed in which will be held a nightly horse show for prizes amounting to $5000. A complete line of dairy and barn equipment will be included with many exhibits of dairy products. Poultry and rabbits also will occupy a prominent place. All's set! Let's go!

THIS KARAKUL LAMB

Is one of the 1919 crop at the ranch of the Kerman Karakul Sheep Company. The skin of this lamb, at present market prices, was worth more than $25 when it was three weeks old. A number of stockmen throughout the State have recently embarked in the Karakul and Astrachan fur-raising business. Crossed with common coarse-wool ewes, a pure-bred Karakul ram will frequently produce lambs having the expensive fur. The breed also possesses excellent qualities of hardiness and stamina, and the meat is high grade and of good flavor.

L. A. Livestock Show

THE Livestock show which was held at Exposition Park, Los Angeles, October 18 to 26, was a conspicuous success. The large number of "foreign" entries in no way detracted from the outstanding feature of the show; namely, a demonstration of the fact that Southern California is no longer a strictly specialized fruit country!

The presence of such exhibitors as the Congdon and Battles herd of Aberdeen Angus from Washington, the Roy E. Fisher herds from Lincoln, Nebraska, and the Wyoming Hereford Corporation of Cheyenne and Denver, attest the national significance of the Los Angeles Show, which it is generally agreed will be an annual event, with constantly growing prestige hereafter, and possibly will lead to the establishment of a Southern California State Fair, patterned after the 1918 Liberty Fair.

Pleased surprise as well as gratification are apparent in the congratulations being showered upon the Board of Directors and the manager, C. R. Thomas. The encouragement of livestock breeding and the increasing number of fine herds being established in the Southland mean much to that section, long in need of diversified farming. To one who scanned the list of entries and prizes at both the Riverside Fair and the recent Livestock Show, it is apparent that a new era has dawned in Southern California.

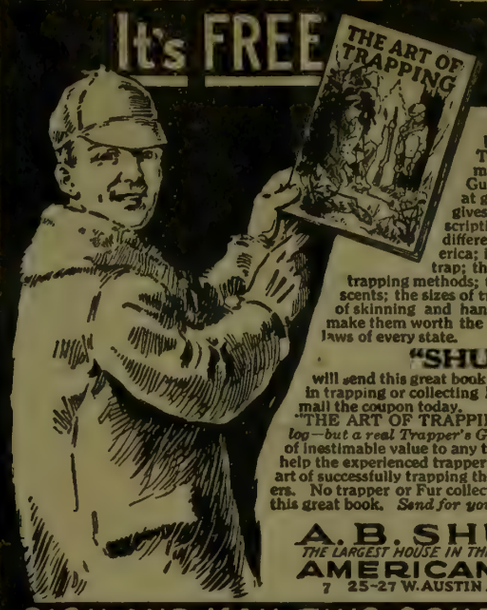
Opportunities in Furs

Never before were fur prices so high; never before did such opportunities present themselves to trappers! Many farm boys and men will make neat little "stakes," on the side, this winter, taking the fur-bearing animals with which our woods and streams and hills abound.

Orchard and Farm will publish some very interesting and instructive articles in coming issues, on the preparation and shipment of furs, as well as practical instructions for trappers. We suggest that every reader who expects to take furs this winter get in touch with a reliable dealer in pelts and supplies, obtain the latest price-lists and lay his plans according to the demand. A great deal of valuable information may be secured from the pamphlets and catalogs distributed by the dealers.

TRAPPERS

It's FREE



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Feeding of Animals

(Continued from Page 11)

the nutrients needed for making milk. The cow must be regarded as a sort of living machine. She takes the raw materials given her in the form of food and works them over into milk. If the supply of proper materials is small, the output will be small. The cow that will not repay generous feeding should be disposed of in favor of one that will, for there are, of course, certain inbred characteristics or natural qualities which even liberal feeding cannot overcome. That is where the tester gets in his work.

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Constipation Cure.—See Ad, Page 18.—Advt.

Nine Plans That Helped Farm Managers

The city man's work is from sun to sun,
But the farmer's work is never done!

By R. L. Adams
Professor of Farm Management, University of California.

(Written Especially for Orchard and Farm)

"NOTHING to do 'til tomorrow" is a phrase with little meaning for the average agriculturist. If the days were 48 hours long and man was so constituted that he could go indefinitely without sleep or rest, still there would always be "something to do" on the farm. The farmer's work is strenuous and unending even under favorable circumstances, but anyone who asserts the profession of farm management is one round of joy and thanksgiving nowadays is a fit candidate for Norwalk or Patton.

For the past five years California farm managers (owners, lessees and salaried men) have had their hands full producing foodstuffs for a hungry world under handicaps of limited labor, limited transportation service, and limited resources of seed, equipment, and sometimes price. I was also going to add "limited climatic conditions," but a good Californian doesn't mention such things.

In this connection it is surprising to what an extent the various farm managers have solved their problems single-handed. For instance, there is a young, energetic farm manager who is responsible for 20,000 acres, largely given over to 1200 dairy cows, hay, grain and field crops. He was in charge when times were most unsettled. As this ranch was, and is, primarily concerned in producing foodstuffs, I was curious as to how things were going.

One Manager's Solution

"Our biggest trouble," the manager said, after he was fully launched on the subject, "is loss of our best tenants by the draft. Ranch help has been heavily drawn upon in our district and we are forced to reorganize our business." Asked how he intended to reorganize, he explained: "For one thing, I am planning to cut each tenant down to one string of cows. This will reduce the herd from a total of 1200 to 800, and will largely make up for our loss of labor.

PLAN NO. 1
Efficiency in Dairying

"Moreover, we shall weed out the tubercular and 'boarder' cows—something we should have done a long time ago—so that the total profits will not be reduced a cent."

This naturally raised the question: "That is all right from the standpoint of the company's pocketbook, but how about reduction of total output, something rather important to the country as a whole?"

The reply was: "As a matter of fact, we won't cut down production at all. I find that by reducing the number of cows my feed will go farther and I shall have more concentrates per cow, both of which factors will increase the production per cow to a point that will make my total production equal the present figure, especially since we plan to go into the whole milk market instead of selling butterfat and feeding the skimmilk to the hogs."

The upshot of the whole matter is that here we find a man meeting difficult conditions by exercising his gray matter; a man who is working out by himself, quietly and effectively, his own salvation. The war has done a great deal to bring about changes in management of farms, many of them very desirable. Marked advances in farm management are taking place, as in other lines of industry. Changes as radical as conscription, setting the clock forward, and government management of railroads, are duplicated on the part of the farmers, many changes having resulted almost overnight which, in normal times, would have taken a generation to accomplish.

Horses and Tractors

For instance, I was talking with a man from a section noted for its jealous guardianship of the interests of its fine horses. "Do you know," he said, "that the farm tractor is actually finding a place with us? You'd hardly believe it! But when we began to figure what it costs us to feed hay and grain as against the number of days' work we have to do, we had to acknowledge that an idle horse costs more than an idle tractor, and the net gain of the horse when working doesn't offset the slightly greater cost of the tractor. That is," he hastened to explain, "for our conditions where we only work our stock from 80 to 100 days a year."

Tractors are being adopted on every hand. In same cases mistakes are being made in the choice of the right type or the right size of tractor, and even in buying a tractor at all; but on the whole, substitution of machinery is along sane and logical lines. One man I know has bought a small tractor to plow all the grain, carrots, stock, beet and corn lands for his tenants, of whom he has a large number, leaving nothing but the seeding, cultivation and harvesting to be done with horses. He charges a flat rate for plowing. He figures that this tractor in plowing and doing the heavy work on 1200 acres does away with about 15 horses. The feed formerly consumed by this work stock will admit an equal number of additional cows to his dairies, and thereby increase the production of food products.

PLAN NO. 2
Tractor Work for Tenants

To Prevent Damage

In his orchard, this tractor owner covered his implements with sheets of light steel. With this protection and the use of a low, orchard machine, with no exposed moving parts to catch in the branches, he is able to cultivate close to the trees without injury to low-hanging limbs.

Use of Milking Machines

In equipping farms with machinery it is interesting to note the increased use of the milking machine in dairy work. One old dairyman says: "I have had milking machines in for two years. They are O. K. But," he cautions, "you want a good one. Some of the latest are great! Give a man not over 50 cows to milk, using preferably one unit, and not more than two units, then require careful stripping immediately after each machine is removed, and there will not be a bit of trouble. Of 200 cows, perhaps 30 won't respond to a machine. This means about one string out of seven which must be hand-milked."

PLAN NO. 3
How to Use Milking Machines

Such farm management problems are continually bobbing up for solution, but the rush of war effort is becoming sufficiently lessened so that a far-seeing farm manager has somewhat greater opportunities to plan his future work.

As one travels up and down the length and breadth of the State, he is bound to turn over in his mind the broad problems ahead of the State in an agricultural way. And as the future will be determined to some extent by the degree of realization, understanding, and solution of these vital problems by the men in charge of ranch affairs, I wonder if it is possible to determine just what constitutes our most serious problem or problems, so that our future agriculture shall be properly safeguarded! It is certainly a big job—and a job in which the farm managers must play their part. In order to determine what others think, I put the question straight to several men whose broad knowledge of the agricultural field makes their opinions especially worth while.

The Farmer's Goal

A man intimately acquainted with field crop production gives as his opinion that the greatest good will come from the substitution of diversified for specialized farming: "Coordination and diversity of interests—animal and plant—to cut out waste effort or slack periods is what we need. This applies particularly to the adoption of a system of diversified farming as contrasted with the growing of single crops. We can produce much more food products all along the line in all branches by means of diversified farming than by single-crop farming. There is a possibility of working out a cropping system that would cut out summer fallow. In growing such cultivated crops as beans and grain sorghums, summer fallowing is not so essential. Those phases having to do with diversification, and to some extent rotation from the standpoint of soil fertility, should come in for first attention."

PLAN NO. 4
A Better Cropping System

Another student of agricultural conditions says: "A better farming policy, including more extensive use of machinery will help us most by increasing the acreage and productivity of much land not now in use and by bringing about better and deeper cultivation to increase the productivity of the land now in use. This factor of 'more power' permeates every department and points to every device from tractors to milking machines. It includes greater development of water resources to do away with uncertainty when depending upon rainfall alone."

An assistant leader of farm advisers answers: "The one thing I see that causes greatest loss is failure to do things on time. Farmers should not allow their work to get ahead of them. That is the reason that wheat and barley crops this year are shorter than they should be. Doing things on time covers fall preparation of the land. Much alfalfa is not cut on time and losses from worms are resultingly great. Nearly every problem in farm management, I think, is a matter of properly planning the work."

PLAN NO. 5
Doing Things on Time

A manager of several hundred acres of grain and a dairy considers a widespread institution of record-keeping as pre-eminently the first consideration. "Every farmer should keep records in order to detect losses and to discover inefficiency. This gives him a basis for making plans. A good example of this need was shown in the recent San Francisco milk cost investigations. Out of several hundred farmer testifying, almost none had any real figures. The showing was disgraceful. But to a thinking man the fact was strikingly brought out that many of the dairies supplying San Francisco are not properly located. They are buying practically all their feed, and operating on high-priced land—two facts which make dairying a very difficult and really an unjustifiable business for them."

PLAN NO. 6
Value of Accurate Bookkeeping

Problems Great and Small

From the above it is evident that there are many points to be considered and either adopted or discarded. Some are possible of individual solution; others require community action. There are problems of maintaining soil fertility, of irrigation, of farm labor, of tenancy; of marketing, of pest control, of range management, of credit, of supplies, of utilizing by-products, of weed control.

There is probably no one single outstanding problem facing the State as a whole, but there are a few of general widespread interest. If I were to name them they would be (1) maintenance of the crop producing power of the land; (2) tenancy, and (3) marketing. Others will not agree at all with my selection or grouping. They will see more potent problems in other departments—and they may be more nearly right than I.

It is safe to say, however, that the importance of preserving, and often replenishing, the crop-producing power of the land is beyond argument.

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This is particularly true in the dry-farmed grain areas which must be farmed to grain and which, for this reason, are gradually falling off in production. It is also true in the rice fields where weeds and other factors limit the number of crops which can be grown continuously. It appears in certain citrus sections and to such an extent that large State appropriations have been made for the purposes of study to learn a means of control.

It appears in the alfalfa fields situated on the light blow sands of the middle San Joaquin Valley. It appears in the tendency toward an acid condition of the soils subject to the heavy rains of the northwestern counties. It appears in the depletion of stock ranges. It appears frequently and seriously enough to result in determined effort to offset the gradual decrease in plant thriftiness.

Run-down Farms

Most farm managers are aware of the usual recommendations, covering crop rotation, inclusion of green manure crops, use of commercial fertilizers, keeping of stock for the sake of the manure produced, and other special methods. It is not generally known, however that definite attempts are under way in this State by practicing farm managers to find a different and workable means for use under existing climatic conditions, and recognized as necessary in order to continue in business.

One of the more outstanding efforts, and one that already has received publicity, is in connection with the 2100 acres comprising the Carneal Ranch in the Livermore Hills. Here a run-down property purchased nearly 25 years ago, has by study and care been reorganized so that average yields of 30 sacks of barley and 20 of wheat are obtained from land which because of the climatic and topographical conditions must be used for grain and grazing. The basis of the work has been a realization of the partnership that exists between livestock and crops. Beef cattle and hogs were selected for the stock. To feed them necessitated year-around pasturage, which was secured by plowing half of the land each year and allowing the other half to grow a volunteer crop. Moisture conservation was not as great as if the land had been fallowed but the obtaining of fertility was considered more important than conservation of moisture. The change in the method of farming cost money. There were cattle to buy, hogtight and stock fences to build, watering facilities to be provided for each quarter section, and storage barns to be erected for straw and hay.

PLAN NO. 7
Building Up Run-down Land

There are 12 hay and straw sheds, placed at points over the ranch where the grain is stacked, into which the straw is blown directly whenever the grain is threshed. Expense of hauling and filling the sheds is thereby avoided and the chaff, containing the principal food value of straw, is saved. Through the use of the preserved straw for winter feeding, one head of stock is carried to five acres of land. From the standpoint of increased yield alone, the equipment expense has been justified. Lately, a three-year rotation plan has been introduced by which one-third of the land is seeded, one-third pastured, and one-third summer-fallowed.

PLAN NO. 8
Conservation of Straw

A Marin County cattleman is tackling the range-feed question. From

(Continued on Page 45.)

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Farmogerm has been made since 1908. It furnishes high-bred bacteria as carefully selected as pure seed. Inoculants vary like seed, some good and some impure. A score of state experiment stations testify that Farmogerm is pure.

Clover, when not inoculated, frequently dies out. Inoculation with Farmogerm is the best insurance of a good yield.

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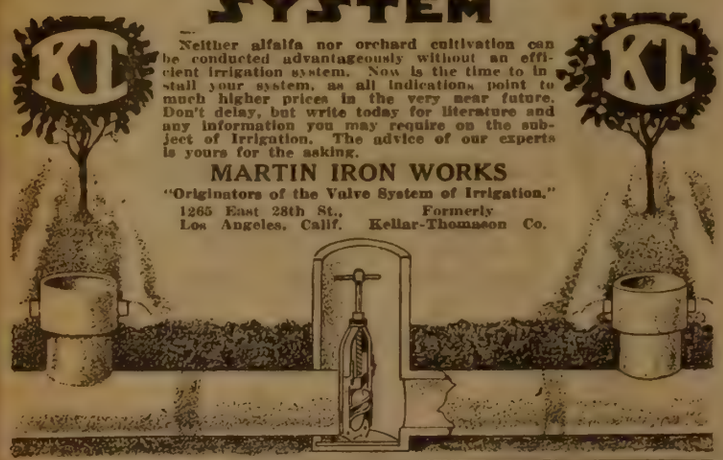

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If so, you have no doubt felt the need of a convenient, simple and handy record sheet. Thousands of dairymen throughout the United States are today using record sheets. We have a record sheet that will fill your every want.

If you have never kept a record now is the time to begin. You can never be as successful a dairyman without dairy records of your cows as with them. Send for enough to run a year—one a month—and you will never again do without them.

Daily Milk Record Sheet for Ten Cows, Size 10 ins. by 17½ ins.

6 Sheets for $ .25,	Postpaid	50 Sheets for $1.25,	Postpaid
15 Sheets for $ .50,	Postpaid	100 Sheets for $2.00,	Postpaid
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If you have ten cows or less, you will need one sheet a month; for 20 cows, two sheets a month; for 30 cows, three sheets a month, etc. Each sheet contains record of the morning and evening milking for ten cows for 31 days, with a space for the total month's produce of each cow.

ORCHARD and FARM LOS ANGELES CALIFORNIA

Horticultural Notes—By Weldon

SINCE it is known that flies spread certain diseases, such as typhoid fever, every effort that can be put forth to protect food products from them is worth while. While we are very particular about having butter, pastry and other common articles of diet protected from flies, and while we may refuse to drink a glass of milk or a cup of coffee into which a fly has crawled, we overlook the fact that fruit upon which they have been swarming may be laden with deadly germs.

In every large city there are fruit stands which are in no way protected from flies and at times myriads of them may be seen swarming about the fruit.

Is it not time something were done to compel fruit to be screened or in some way protected so that the flies cannot contaminate it? If city health departments have no power to act, then the State should have a law to protect the public against this grave menace!

Fruit growers are concerned with such legislation, not alone because of their natural interest in the public health and welfare but also because they realize that anything tending to make fruit more attractive to the consumer will increase sales and consequently prices. The entire country is being educated as to the fly menace and flies are not tolerated as they once were. It is therefore to the advantage of every fruit grower to interest himself in the passage of legislation which will assist in placing his product before the consumer in the most attractive form. And the retailer affected by such legislation would, in reality, be benefited as much as the grower. Often beneficial reforms have to be forced upon those who are helped most by them!

Burn the Prunings

Orchard prunings piled within or near the grove involve danger that is not sufficiently realized.

At least two well known pests are almost sure to breed in prunings after they become dry. These pests are the olive twig-borer and the shot-hole borer.

These insects naturally breed in dead wood, but may begin their work in weakened trees or dead portions of trees, gradually causing the death of live wood.

There are, in addition, certain bacterial and fungous diseases (for example, pear blight) that may be spread as a result of carelessness in this matter. In order to be on the safe side the orchardist should remove prunings from the orchard and burn them. In the case of larger limbs, they may be stacked for use as firewood during the winter season, but in the case of smaller branches burning immediately after they are hauled from the orchard is the wisest method of disposition.

Water Is King!

The dry season through which we have been passing, following a winter of insufficient or at least poorly distributed rainfall, has once again emphasized the need for irrigation and the folly of failing to develop water in cases where there is a sufficient supply for pumping or for storage.

The situation has been somewhat relieved by the unprecedented demand for fruits of all kinds, the small size as well as the large being eagerly bought by the canners. Some of the dry land fruit is so small that its only value is for butter or jam. Dry land farming is easy farming and appeals to the man of small capital as well as to the man who lacks the nerve or the energy to spend the money necessary to develop a water supply.

But water is, after all, a cheap insurance; without it California horticulture would amount to little; with it the "desert blossoms as the rose," and fruit growing becomes a comparatively safe and profitable occupation.

Irrigation development is in its infancy in California, and each year sees thousands of acres added to the already large area under irrigation. Dry land farming, whether it relates to production of field crops or fruits, is rapidly taking a back seat when the available supply of water for irrigation is utilized to the best advantage.

There will be eventually few acres in California unirrigated and the production will be increased to such an extent that it is doubtful if any other State in the Union can boast of as great agricultural wealth.

The past dry season should encourage irrigation development, so that such heavy losses as have been suffered this season may be reduced to the lowest point. With water, California's wonderful soil and sunshine will produce yields of all crops that cannot be excelled anywhere. Without it, every hazard is multiplied a hundred fold.

How Much Space?

There is a growing tendency in some quarters to plant trees closer together than formerly. And, indeed, it is doubtful if there is wisdom in the theory that the more trees planted per acre the greater will be the profit. Without sufficient room, the roots of a tree may not be able to gather the necessary food supply.

It is a matter of common observation that the outside rows of trees are the finest and produce the best and most fruit. There is usually nothing to account for their greater size, vigor and productivity except the extra space allowed.

Again we observe frequently that fruit trees close to a wind break are stunted; they are crowded for room. May not failure of our orchards to produce marketable sizes of fruit be due often to overcrowding?

Peach Thrips

Over a wide range of territory peaches harvested the past season showed injury which puzzled many growers.

The injury consisted of a scarring or pitting of the fruit, due to the attack of a tiny insect which rasps the surface and sucks the juices shortly after the fruit is formed. The complete life history of this pest has not yet been worked out by the entomologists, but it is known to be some species of thrips of which there are many that are classed as pests of the orchard.

When peaches are attacked, prompt spraying with black-leaf "40" at the strength of one part to 1000 parts of water and about two pounds of whale oil soap to every one hundred gallons of spray, will control the pest. The work must be done while the fruit is very small, as the insects first feed in the bloom and later upon the small peaches.

Ailing Fig Trees

"We have Black Mission Figs from 6 to 12 years old. The older ones seem to have something wrong with them. The leaves turn brown and dry and drop off, looking as though they had been scorched. The fruit this year is small and does not ripen well and many figs dropped before ripe. There are several large eucalyptus trees not far from the figs."—Sarah F. Boardman, Bell, Cal.

It is difficult to know without seeing the fig trees mentioned in this letter, just what has affected them. I would suggest that you examine the root system as there may be trouble below the surface of the soil. Gophers are very fond of figs and frequently girdle them. It is also possible that on account of the eucalyptus trees which are grown nearby, the moisture in the soil has been exhausted as well as the supply of plant food, and the figs are suffering as a consequence.

Thompson Seedless Grapes

Reply to I. D. Loffin of Calexico (Imperial Valley), who inquires whether Thompson seedless grapes can be grown in his locality:

Thompson seedless grapes, like nearly all other varieties of grapes, may be grown on various types of soil.

This variety originated in Sutter County and is now grown successfully throughout the San Joaquin Valley and also in certain sections south of Tehachapi.

While grapes, like all other kinds of fruit, will respond better to soil conditions which are very favorable with respect to plant food, they will grow and do well on soils that are very light and sandy and which may not be as high in plant food as tree fruits would require for good results.

It is very probable that this variety of grape would do well under the conditions that exist where Mr. Loffin is located and whether or not it should be planted would depend upon conditions regarding drying. The Thompson seedless is now one of the favorite raisin grapes of California and wherever conditions will permit of its being dried successfully, it is probable that it can be grown to advantage.

Almond Proposition

"I am sending a sample of almonds taken from a 27-year-old tree which has never had any care. Last year it bore a heavy crop but this year the yield was light. I wonder whether almonds would do well here. The land slopes to the north; has light, red, gravelly soil. It seems to me much land in this vicinity would be better for orchards or vineyards than for stock-raising."—P. E. Hallett, Ponoak, Cal.

The sample of almonds arrived. These were not first class probably because of the reason that you mention: no care of the tree. The kernels were found to be shrunken considerably, and the flavor was not as good as would have been the case had the nuts matured properly.

They, however, indicate that conditions of soil and climate where you are located may be well adapted to the growth of this nut. One thing that you mention might be against success of the business in a commercial way, and this is light bearing. The almond, more than any other spring fruit, is subject to early spring frost injury, because of its very early blooming characteristics.

Perhaps your light crop this year was due to frost at blooming time. If in your section there is little danger of frost at the time when the almonds are in bloom, it is probable that an orchard could be made a paying proposition.

We would suggest that you have some competent man from the University of California or elsewhere, look over your proposition and advise.

Wormy Peaches

Each season the damage to the new growth of young peach trees, and to the fruit of bearing trees is very great in certain localities. While the injury to the fruit is less severe than that of the coddling moth when it attacks the apple, pear and walnut, it is similar and causes material wastage and financial loss.

An examination of many peaches in canneries recently, has indicated the need for more careful attention to spraying for the control of this pest. The method is so easy and so sure that there is little excuse for failure.

In all peach orchards where the pest occurs (and there is more or less of it in most of them) a thorough treatment of lime-sulphur will give perfect results. Its action is to kill the tiny (almost microscopic) larvae which construct hibernating cells in the smaller crotches of peach trees and sometimes almonds and plums.

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C. E. BROOKS, 105 State Street, Marshall, Mich.

More About Panariti Grapes

OUR readers will recall the remarkable articles featured by Orchard and Farm last winter and spring, describing a "New million-dollar grape industry" for California, written especially for this magazine by Professor George C. Hussman of the United States Department of Agriculture.

No other farm paper foresaw the importance of the "Panariti" or currant grape, described by Professor Hussman in these articles. Our prediction that great things would come of the discoveries made by the department already is coming true.

It will be recalled that in order successfully to grow the "Panariti," it is necessary at a certain period to "girdle" the vine; that is, cut a ring around the trunk or bearing canes. It was the discovery of this process that placed the industry on a sound footing in this country, and opened up the possibility of supplying at home the annual importation of more than 30,000.000 pounds of dried currants customarily obtained from Europe.

As a result of the articles in Orchard and Farm and brief mention in other papers, more than 7000 cuttings of the "Panariti," which is a dark variety of Corinth grape, were distributed last spring from the department's experimental vineyards and those of co-operating growers. They have grown splendidly, reports show. As a result, much material in the way of propagating stock and cuttings will be available by the spring of 1921 for the extension of the currant industry.

The fact that a great market is already created for this product means much to the grape growers of the West. A product, however meritorious, with which the public is not familiar, requires a great deal of costly advertising and educational promotion to become fairly popular with the consumer. Nothing of this sort is needed so far as currants are concerned. The development of a new branch of the grape-growing industry is of special interest to the vineyardists of the Pacific Coast at this time when the industry is undergoing a radical readjustment.

Therefore, mark Orchard and Farm's prediction, and keep your eye on the "Panariti."

Some Seasonable Observations

As Expressed by Ben Gonnadooit

I RID by Sam Perkins' place this mornin'. He'd better be fixin' th' roofs on his buildings. It's goin' to rain hard before long and he'll wish he hadn't put it off so long. I'd put a new roof on our kitchen ef other work wasn't so pressin'. But so long as they is only that one hole, it is easy t' catch all th' water in a dishpan. My wife is an early riser an' it ain't never yet rained through enough in th' night t' run over ont' th' floor before she could empty it.

I don't see how George Cramer kin let his machinery stand out all winter th' way he does. Why plows an' harrers costs twicet as much as they did ten years ago; yet he's gonna have t' buy some more next year ef he don't get his'n under cover. Not havin' none of my own that is any account, I don't have that t' look after, but ef all his goes to pieces where am I goin' t' borrer any tools t' do my work next summer?

I got another neighbor thet don't seem to be very wide awake. That's Jud Gibson. He ain't culled a single hen outa his flock an' his chickens is a goin' int' the moult an' eatin' a lot o' expensive grain when he might better be red of about half them old hens. If the mites an' lice hadn't a killed off all of ourn, I'd show him a thing or two about shapin' up a flock of chickens. Don't see how he can be so keerless!

And there's Tobe Sparks over on the Farmdale road. He shorely ain't got much business jedgment. He is doin' nothin' when he might be trimmin' th' underbrush out of his woodlot. Why I've had our'n all cut and waitin' t' be piled up and burned fer over two years!

Seems like most o' th' folks in my neighborhood is so tuk up with eddication, an' farm bureau meetin's an' chatauquas an' short courses an' what not, they is too busy t' associate with the likes of us that is content with our lot. I don't reckon it makes so much difference how a feller talks so long as he makes hisself understood. I know MY kids ain't goin' t' spend their time a readin' Latin an' doin' fractions, while their pore old Daddy works hisself sick t' support em'. No siree! I got along all my life without bein' able t' read an' write much.

It's no wonder this here community don't progress none. Lots of times I've had a notion t' sell out and move somewhere's where people was a little more up an' doin. But shucks, my wife has worked up such a good trade doin' washin' here thet I would hate t' lose our income by makin' a change! Ho-hum! Wonder if th' fish is bitin'?

A Famous Poultryman's Secrets of Success

THE largest poultry farm in the world is said to be operated by J. Ray Corliss of Petaluma. According to J. E. Kresky of that district, with whom Mr. Corliss is associated in the manufacture of poultry equipment, the Corliss farms regularly carry from 45,000 to 50,000 laying hens.

The foundation for the success of this poultryman was laid only a few years ago, when he figured out on paper a plan based upon sound business judgment and common sense, which he has since followed with all the enthusiasm and energy he possessed. He believes the personal element to be the controlling factor in every business, and maintains an enviable relationship with his employes, rolling up his sleeves and working among them whenever occasion demands.

Like most men of large affairs, however, Mr. Corliss finds time for many activities outside his own business, and is now vice president of the Poultry Producers' Association of Central California, as well as a director in a number of smaller concerns operating in Petaluma.

The secrets of his rise in the poultry business are summed up as follows: (1) Practical experience backed by sufficient capital to make a safe start; (2) the laying out on paper of a carefully thought-out plan, based upon the soundest poultrying principles, knowledge of which was obtained from first-hand study; (3) persistency and enthusiasm to carry out the original plans, which called for regular expansion of the business; (4) broad-mindedness and interest in the welfare of the majority.

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Size	Tire	Tubes
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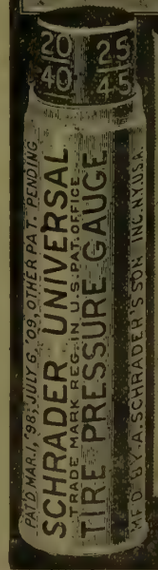

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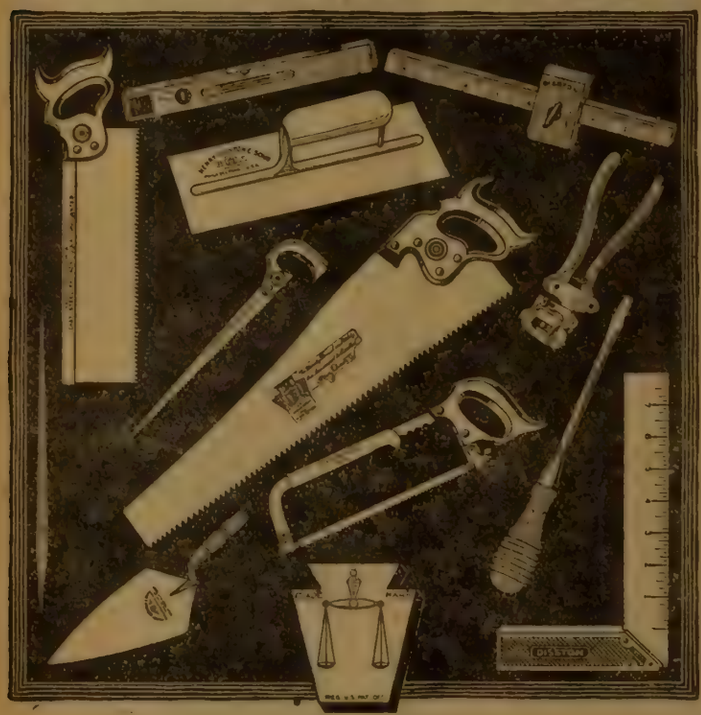

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"The Home of the Hairy Peruvian."

Control of the Apple Aphis

By O. E. Bremmer

Horticultural Commissioner of Sonoma County.

SOME one has credited the codling moth with bringing about the scientific development of the apple industry, and it is possibly true that the necessity for spraying has had much to do with standardization in its broadest sense. It is difficult, however, to convince the sorely beset fruit grower or inspector that all pests are blessings in disguise!

Of all the ills that beset our trees and plants, the aphis problem is one of the most difficult to combat. This is due to the intricate life history of these enemies and their utter disregard for all civilized rules of propogation, for it does not take one "stem mother" and her few succeeding generations very long to develop a family running into six figures.

It has, therefore, been the aim of the orchardist to "get" the aphids when they were most accessible and fewest in numbers. Working on this theory, we have evolved a system of fall spraying that is theoretically correct and at the same time works out in practical usage.

The Life-Cycle

Probably no aphis causes a greater loss each year, at least in the apple growing sections of the Western coast, than the so-called "rosy aphis." Just as the green buds appear in the spring it hatches from well-concealed, shiny black eggs and proceeds immediately to attack the leaves, blossom clusters and later the developing apples. It causes the leaves to curl and the apples to be distorted and stunted. The growth of the tree also is stunted and the wood develops poor texture. We even find that trees affected with aphis develop the "fruit spot" much more readily than clean trees; in fact, if this disease is really a physiological one, there is good reason to suppose that the toxic effect of the aphis has much to do with the spot. If this disease can be credited to the aphis it would probably bring the total destructiveness to 15 or 20 per cent of the entire apple crop of the West. During the early summer the aphids acquire wings and leave the trees for a secondary host, returning to the apple trees during October. These winged migrants place living young on the leaves.

When to Spray

The sexual females lay the overwintering egg from which the spring generation is derived. It is, therefore, evident that if this wingless sexual female is destroyed before she lays eggs we will have no spring aphis to combat. The eggs are usually in groups of three and are deposited the first part of December. This time may vary for different sections and different years, but along the coast from Watsonville to the State line it has not varied a week in the last five years. It is, therefore, safe to say that if the trees are sprayed thoroughly any time after the 15th and before the 25th of November a clean-up will be the result. It is not wise to spray sooner, as the aphids congregate in the persistent leaves and the later one sprays the fewer the leaves that remain to be covered. Some times the aphids on one tree will be found on one hundred leaves or less.

Almost any aphis-destroying spray may be used—five per cent crude oil emulsion, kerosene emulsion or light distillate emulsion (two per cent) with Blackleaf "40" added at the rate of 1 to 1500. In fact, it is not so much the material as the thoroughness with which it is applied that counts, as every leaf must have the under side covered with the spray material. We are inclined to believe that the Nicotin dust spray used with such success for the walnut aphis will prove the most thorough and the easiest to apply. We have not had a chance to try out this material on this particular aphis, but find it works perfectly on prune and other similar forms.

Dropping of Persimmons—Cause and Cure

The dropping of persimmon fruits is a common fault of the tree here in California. The cause of this trouble is not definitely understood, but may be due to any of several things.

Certain varieties of persimmons bear both male and female flowers on the same tree. Our best varieties, however, bear only pistillate or female flowers. The male flowers are small and are usually borne in clusters of three; the female flowers are single and much larger and are borne in the axils of the leaves.

In Florida where some varieties fail to bear regular crops, it has been found profitable to plant a few trees of the variety which is known to bear regularly male flowers in among the fruiting trees. This insures sufficient pollen to cause the fruit to set, but reduces the number of seeds to a minimum. Since there are several orchards in California bearing excellent crops without this provision for pollination, I do not see that it would be of any great benefit with the most of our orchards here.

The dropping of the fruit is in many cases, I believe, due to the use of too much water around the trees, and the resulting vigorous growth which the tree makes. It is not due to any fungus disease as far as we know. It might be advisable to pinch off the tips of the branches on which the fruits are produced and thus to throw the strength of the twigs into the fruits themselves.—Prof. I. J. Condit.

Quack Tree Doctors to Be Avoided

It has been called to the attention of Orchard and Farm that so-called "tree powders" are again being advertised and sold in the State. The advertisements or agents for these materials generally claim that if holes are bored into the trees and certain quantities of the powder are put into them, the trees thereafter will be free from insect and fungus injury.

The theory is suggested that the poison will be taken up by the sap, distributed throughout the tree and act as a specific against all kinds of insects and diseases. Sometime it is also claimed that the material will also act as a fertilizer and tonic and thus lead to greater productiveness. It is generally the novice that is made the victim of these cure-alls, for the experienced commercial grower has learned to leave them alone. However, each year enough victims are misled by the claims for them to make their manufacture and distribution profitable.

It might be stated that the grower should place no reliance in these fake remedies. Good sanitary methods of orchard management coupled with thorough spraying constitute the means of controlling the insects and diseases of the orchard; and these alone should be relied upon.

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to 8 cords daily is the usual average for one man

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SAWS DOWN TREES

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When answering advertisements please mention Orchard and Farm.

Fall Orchard Work

(Continued From Page 8.)

apricot scale are serious pests. They breed very rapidly unless parasites or unfavorable conditions keep them under control. They occur principally on the new, slender growth of the infested trees. In order to reach all of them with a contact spray it is necessary that no portion of the twigs be missed. This necessitates the spraying of trees from every angle, as well as the use of good equipment.

It may be well here to mention the so-called "spray-gun," of which there are different types on the market, which bids fair to revolutionize the spraying business. With the spray-gun it is possible to do the work much more quickly, and also much more thoroughly than with the old type of rod and nozzle.

Mention has been made of fall irrigation, fall plowing, fall cover crops and fall spraying. If pears are being grown, there is one other thing

Strong Buds

Fall irrigation aids in making them like this. Here is another kind of crop insurance! Is it not worth while?

that must not be overlooked in the fall program of work and that is the removal of blight. As more is being learned about this disease additional reasons for being afraid of it are developed, and consequently the grower should make an effort to remove all blighted branches whenever they are found. The disease is now thought to be spread by winds as well as by insects, and there is no doubt but that rain also plays a part in its dissemination.

Fumigation Injury

CITRUS fruits which have been fumigated for the control of scale insects, are frequently covered with brown spots as a result of the fumigation.

No spray or fumigant has ever yet been discovered that will act uniformly under all conditions.

Such injury should not make the grower lose faith in fumigation, but should make him insist that conditions, climatically, are favorable before the work is done.

The treatment of citrus trees with hydrocyanic gas is expensive and there are few growers who can afford damage from the gas in addition to the expense.

No effort should be spared by those who are doing public fumigation work to prevent losses from burning, due to unfavorable weather conditions.—G. P. W.

The '49er says= "the genuine GIANT dates back to 1866"

"I remember well when we used black powder for stump blasting and mining. Just after the Civil War the first Giant Powder ever made in the United States was manufactured in a little laboratory in what is now Golden Gate park.

"Out of that beginning has grown The Giant Powder Co., Con., with its chain of great plants and magazine stocks throughout the entire West. And the Giant Farm Powders are being used for stump blasting, boulder blasting, tree planting, etc., by thousands of Western land owners. Giant Powders have always been so popular that some people have thought any ordinary dynamite was Giant Powder, but that is wrong. The only way to get Giant economy and efficiency is to get the genuine Giant Powders made by the originators of the name."

Just tell us "send me your book," and we will mail you our valuable guide to blasting, "Better Farming with Giant Farm Powders."

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GIANT FARM POWDERS

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28 cents per line..... 3 times
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COUNTRY PROPERTY—For Sale

FOR SALE—Carlsbad Paying Country Homes By the sea. From four acres planted in the fall a $1680 crop of winter peas was picked and the land then made ready for summer crops, which may pay well, too. So do other vegetables, berries and figs at Carlsbad on Ocean Highway and railroad, between Los Angeles and San Diego. Frostless, irrigated, finest climate and soil conditions in the State.
F. H. TOLLE,
Broadway 5395. 712 Garland Bldg.
740 South Broadway, Los Angeles.

FOR SALE—At Mountain View, in the famous Santa Clara Valley, a beautiful orchard home of ten acres, prunes and apricots, a few almond and walnut trees. Good income property. House of ten rooms, two toilets and bath, electric lights and telephone. Good outbuildings, close to town and schools on a good main road. Price $18,500. For further particulars address T. W. B., 1108 Cabrillo Ave., Burlingame, Cal.

FOR SALE—Eighty acres, level, unimproved, well fenced, and eight miles from Davis, Yolo County. Address G. H. Bower, 3301 33rd St., Sacramento, Cal.

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300,000,000 ACRES OF FREE LAND IN U. S.—The Homeseeker, a 104-page book, with maps and illustrations, showing millions of acres of public homesteads, timber, mines and grazing lands; founded on historical facts, does NOT MISLEAD; read official warnings; eliminates crooked land agents; tells whereabouts of government land in Arizona, New Mexico, Nevada, California, Idaho, Oregon, Montana, Utah, Washington and Old Mexico. Describes water, soil and climatic conditions. All principal U. S. land laws. A marvelous publication. Just off the press. Mailed anywhere, $2. Address THE HOMESEEKER, Dept. 5, Third Floor, Grant Building, Los Angeles, Cal.

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San Joaquin Valley

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See R. D. TINKLEPAUGH,
Seventh and Spring, 635-640 Van Nuys Bldg.
Los Angeles, Cal.

WANTED—Acreage to lease Japanese Headquarters. Nippon Realty,, 105 E. 1st, L. A.

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WANTED to hear from owner good farm for sale. State cash price, description. D. F. Bush, 40A, Minneapolis, Minn.

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Chester White big type registered pigs, either sex. Prices moderate. Cedarhurst Ranches, R. D. No. 2, Sacramento.

LIVESTOCK—Berkshires

BUY LAND
Suitable for Almonds, Apricots and Raisins, at Arbuckle, Colusa County, where land values are not inflated.
For information, write
EDGAR E. WIKER,
Arbuckle, Cal.

FOR REAL GOOD BERKSHIRES write Frank B. Anderson, Box 724, Sacramento, California.

LIVESTOCK—Poland Chinas

REG. BIG TYPE POLAND CHINAS—Am offering a few good boars ready for light service at reasonable prices; also booking orders for boar pigs of this spring's farrow for June delivery. J. H. Cook, Paradise, Calif.

LIVESTOCK—HOGS

FOR SALE—Bargain: 135 pure-bred, bred, brood sows, 4 pure-bred boars and 650 head weaned pigs. Price for the lot, $10,500. Or will sell in lots of 25 or more sows and in lots of 100 or more pigs. Address Box 128, Lancaster, Cal.

LIVESTOCK—HORSES

FOR SALE—JACK; Col. Hammond; registered. Is gentle; black and white points. Come see him. Make offer. Must sell. Weight 1200 lbs. H. S. Garrison, Murrieta, Cal.

LIVESTOCK

"RAISING Calves Without Milk." Send for free booklet telling how to do it. Coulson Company, Petaluma, Calif.

RAZOR BLADES SHARPENED

DULL BLADES RE-EDGED, 30c doz. Send for mailing box. Howard Specialty Works, Dept. B-93, Los Gatos, Cal.

A Modern King Canute

The people who lived in the good days of the wise King Canute thought he had the power to make the ocean recede at a mere word of command. Today the Bell Telephone Company finds itself in a position not unlike that of the ancient king. Its mere word will not hold back an ocean of expense.

Rigid economy and the most modern methods of operation have made it possible for the Bell Company to keep its rates at a far lower level than that of the commodities which it must use in construction and upkeep. But it has felt the rising tide of costs just as certainly as has every business and every family.

The one source of revenue of the Bell Company is the price you pay for service. If this price fails to cover fair wages and necessary materials, then both you and your telephone company must suffer.

For one year the Bell Company was under Government control. The Government analyzed methods and costs; and established the present rates as just. All the Bell Company asks is a rate sufficient to provide satisfactory service to every subscriber.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Water!

Standard Well-Boring Outfit

FT. WELLS BY HAND

Thousands used during war by U. S. and English Governments.

THE SPECIALTY DEVICE CO.
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Use Your Auto!

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DRIVE YOUR FORD
PLOW YOUR FIELD
SAW YOUR WOOD
GRIND YOUR GRAIN
PUMP YOUR WATER
ELEVATE YOUR GRAIN

Ward Work-a-Ford

WARD MFG. CO. 2115 R St., Lincoln, Neb.

GOING TO BUILD?

Send for our Price List of Lumber, Sash, Doors and Builders' Supplies. We save you middleman's profit.

Contractors' & Builders' Supply Co.
1401 Erie St., Oakland, Cal.

BELTING

Rubber, Leather, Canvas, etc.
One for Every Purpose
and Conditions.
LOS ANGELES RUBBER CO.
131 East Third St., Los Angeles.

Syrup From Our Wine Grapes

A GRAPE syrup of fine full color and rich flavor has been made recently from wine grapes by the Viticulture Division of the university. This product has been recommended for those who have need for it in preference for table use, for table flavoring purposes, for pastry and sugar manufacture and for use in home canning. It can be manufactured in quantities if a market for it could be made for additional revenue. The modern process, theory and other phases of the development of wine substitutes, especially such as wine making, would be necessary also in the manufacture of grape syrup. The method of making this syrup is known as the vacuum process.

A pound sample of syrup of fresh grape flavor and red color has been made as an experiment in comparing syrup made by the freezing process with that made by the vacuum process. Concentration by freezing removes the moisture of the fresh grape flavor with the result that each ounce would contain about 2 ounces of fresh grape juice.

The maximum for the freezing process is estimated for a large commercial plant, handling 10,000 pounds of grapes, much of the machinery and substantial parts of the equipment of the plant could be purchased or rented. Syrup by the vacuum method was produced by the freezing process. The freezing process is cheaper but more expensive in the equipment required and the time for the process for some models of machines.

Commercial Enterprise Needed

There is necessary an basis [illegible] each grapes of each variety of wine [illegible] the necessary capital [illegible] the necessary equipment [illegible] and [illegible] for them. The [illegible] for this [illegible] from Fresno [illegible] to which [illegible] have been paid [illegible] handling good not appears to be an especially hazardous enterprise.

The following outline will give an idea of the steps involved in the two processes.

The Vacuum Process

1. Gather grapes at 20 to 25 per cent Balling ("sugar test").
2. Crush and press.
3. Heat juice in compartment pasteurizer to 150 degrees F. and return to skins.
4. Leave on skins eight hours.
5. Press.
6. Heat to 140 degrees F.
7. Allow to settle 24 hours.
8. Draw off from sediment.
9. Filter.
10. Concentrate in vacuum pan to 30 degrees Balling.
11. Allow to settle four weeks.
12. Draw off, heat to 190 degrees and fill into sterile cans or bottles. Be draw off and fill pail into sterile barrels.

Freezing Process

1. Treat fruit as the vacuum process, steps 1, 2, 3, 4 and 5.
2. Freeze slowly in the compartments at 10 degrees F. to 15 degrees F. to remove the most of the acid syrup.
3. Centrifuge.
4. Freeze syrup again at 1 degrees F.
5. Centrifuge.
6. Combine one part of this syrup with two parts of syrup from vacuum-pan and treat as described for vacuum-pan syrup.

Use of Pomace

Pomace is the press-cake of skins, stems and seeds from the press. It contains a large amount of sugar. This may be recovered by leaching with hot water. The dilute liquid so obtained may be used to augment a second lot of pomace and then may be concentrated in a vacuum-pan to a syrup.

The leached pomace may be dried and the seeds removed by screening. Almost 40 per cent of their weight is oil and may be recovered by crushing and pressing in hydraulic presses. Each ton of grapes will furnish about 90 pounds of seeds from which about three-fourths to one gallon of table oil may be recovered. The seed-press cake makes a high grade feed. It also contains an appreciable quantity of tannin suitable for leather tanning if precipitated with water and concentrated to a syrup.

Costs and Returns (Estimated)

Item	Cost per Gallon of Syrup
Grapes at $70 per ton	$ [illegible]
Cost of manufacture	[illegible]
Cost of (unrecovered) [illegible] etc	25
Total	$1.[illegible]

In other words, the syrup is made by the process [illegible] and sold at the factory at $1.00 per gallon would return from about $30 per ton for grapes. Low [illegible] would [illegible] grapes [illegible] of syrup.

1. Image of machine [illegible] gallons per 24 hours would require the following equipment in addition to the machinery already at hand in all large wineries:

1. Concentrator, consisting, capacity 300 gallons per hour	$[illegible]
2. Vacuum pump, capacity [illegible] per 24 hours	[illegible]
3. Filter	[illegible]
4. Line 30 h. p. boiler	[illegible]
Total	$[illegible]

Important By-products

The syrup when first made contains a large amount of impurities [illegible] Some may be removed by permitting the syrup to settle [illegible] The crystals of potassium [illegible] the syrup is [illegible] and when the syrup is [illegible] and the tartar is washed [illegible] and [illegible] for [illegible] and [illegible] grapes [illegible] and [illegible] soluble to [illegible] factories.

Summary and Conclusions

The manufacture of red grape syrup may be undertaken by any large or medium-sized winery with a very good prospect of profitable returns. The cost of such equipment would amount to about 12 cents per gallon of syrup produced on a [illegible] run of 30 days of 24 hours each.

The syrup as of grape juice and Tokay and other [illegible] is adapted to many uses in the household and in the manufacturing of fruitcake sauces and wine.

Breweries are well equipped to produce a highly flavored syrup under assume by the leaching process. The [illegible] of the concentrated fruit juice [illegible] may be used as substitute the flavor of vacuum-process syrup, [illegible] suitable for use as grape juice when diluted with three parts of water before use.

The writer believes grape-syrup is the [illegible] type and wants the attention of vineyards and wineries and [illegible] a partial solution from their viewpoint and the growers of this problem arising from the passage of prohibition legislation.—W. V. Cruess.

NOTE—Grape growers or others desiring more complete information and full directions on this subject may obtain same by addressing *Professor Cruess, Viticulture Division, Agricultural Experiment Station, Berkeley.*

Nine Helpful Plans

(Continued From Page 37.)

years of contact with farming operations in his section he has come to view with concern the depleting grasses. His plan of procedure provides for an arrangement of fields so that they will be fed in rotation and the young feed favored during its early growth. He has also provided for some plowing up of old pastures, and for reseeding of lands too rough to plow. It is believed that feed production can be brought up under these carefully drawn plans without the necessity of reducing the number of head of stock. The Cuyama Valley—well known to old cattlemen—has been lightly stocked for the express purpose, so I am told, of permitting the more easily destroyed grasses to re-establish themselves.

PLAN NO. 9
Rotation of Pasture

Working as a Farm Bureau unit, farmers of Humboldt County have used a great deal of lime as an aid to correcting acidity. In Monterey County the use of commercial fertilizers has been put in practice on a relatively large scale during the past two years, while the Stockton Delta farmers are testing the use of potash, nitrogen and phosphoric acid on their particular crops.

Of all the methods open to California farmers except perhaps to orchardmen, diversified farming offers the best solution of the diminishing fertility problem, for this means more extensive practice of crop rotation, green manuring, and inclusion of livestock in the farming plan. Diversified farming is worthy of separate discussion in a coming issue.

(This is the first of a series of articles on California Farm Management, written especially for Orchard and Farm by Professor Adams.—Editor's note.)

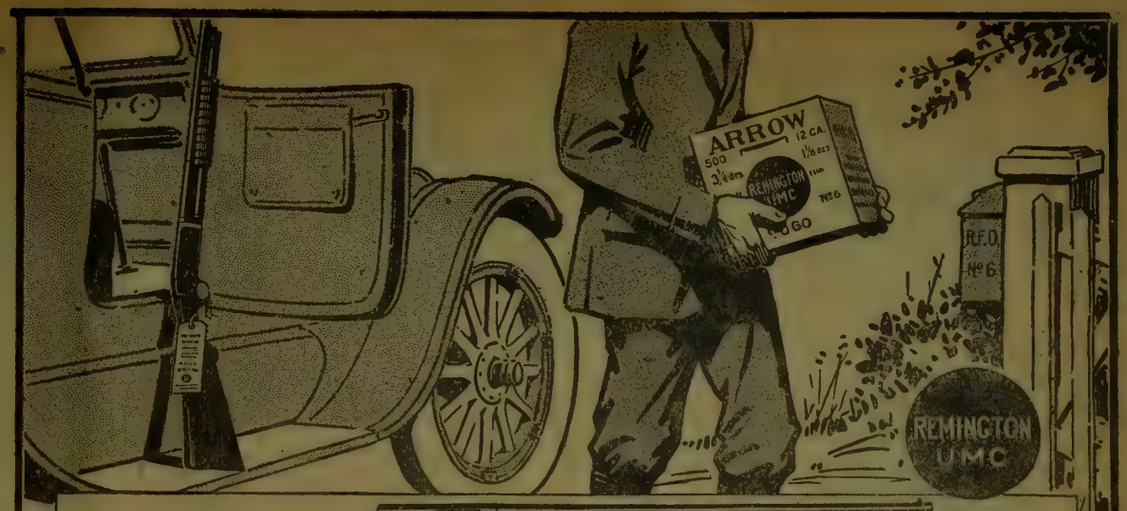
A Lesson in Feeding

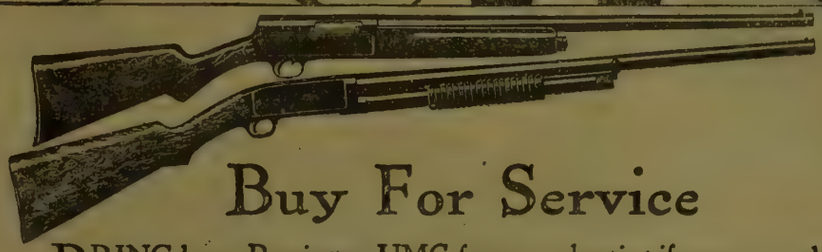
A San Joaquin County dairyman was recently discussing the subject of farm management. "If every dariyman or farmer would keep cost accounts," he said, "a great many losses would be prevented. I checked up on the cost of raising my heifer calves and the figures were startling. It made me realize that I had to raise pure-bred or at least high-grade stock in order to break even, much less show a profit.

"One year I computed the cost of raising ten calves to the age of 12 months. The amount of feed consumed by each calf was as follows: Hay, 600 pounds; grain, 875 pounds; silage, 3500 pounds; milk, 110 pounds; skim-milk, 2500 pounds. At present feed costs it will be seen that it cost me around $75 to raise each calf.

"But the second year showed even more expense. Part of the calves that were brought up to two years of age cost me nearly $175 each for feed alone. This does not take into consideration labor of feeding and handling, cost of equipment, losses, or any other expense.

Oliver Owl: "Darn these automobiles! A fellow can't have any seclusion any more!"





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BRING home Remington UMC for your shooting if you are modern minded. Your first leisurely and critical examination of your purchases will reconvince you that you have bought wisely. And use will prove it.

No other equipment the up-to-date farmer or ranchman buys is more typical of modern efficiency than the Remington UMC products he uses to get some game for his table. And in the long list of important Remington UMC inventions underlying this, none has been of greater value to him than the wonderful Wetproof improvement in shot shells.

Wet shot shells will never again bother you if you buy Remington UMC Wetproof "Arrow" or "Nitro Club" smokeless or "New Club" black powder shells. The hardest rain or longest soaking in a leaky boat will not affect them.

In body, crimp (or turn-over) and top wad they will remain hard and smooth as if fresh from the loading machine, and they will work freely through your modern Remington UMC autoloading or pump gun, without a hitch, firing as surely and with the same top speed, best pattern and penetration.

Remington UMC can now be obtained in more than 82,700 leading sporting goods and hardware stores in the United States—another detail of best service.

For Sale in Your Nearest Town

Clean and oil your gun with Rem Oil—the combination Lubricant, Powder Solvent and Rust Preventive.

THE REMINGTON ARMS UNION METALLIC CARTRIDGE COMPANY, Inc.
Largest Manufacturers of Firearms and Ammunition in the World
Woolworth Building New York

RHEUMATISM

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered, as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number, who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 756E Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

When answering advertisements please mention Orchard and Farm.

50 Eggs a Day

Yes—fifty a day. How? Read the letter below.

"'More Eggs' Tonic is a God-send," writes Mrs. Myrtle Ice, of Boston, Ky. She adds, "I was only getting 12 eggs a day and now get 50."

Give your hens a few cents' worth of Reefer's "More Eggs" and you will be amazed and delighted with the results. **A million dollar bank guarantees if you're not absolutely satisfied, your money will be returned on request and the "More Eggs" costs you nothing.**

"More Eggs" will double this year's production of eggs, so if you wish to try this great profit-maker, write E. J. Reefer, poultry expert. 3748 Reefer Bldg., Kansas City, Mo., for $1.00 package of "More Eggs" tonic.

Poultry Raisers Everywhere Tell Wonderful Results of "More Eggs"

Makes Hens Moult Fast

I would not be without "More Eggs" if it cost $10 a package. It has hurried the molt for me and all my hens are now laying their full capacity.
JOE MARTIN, West Plains, Mo.

"More Eggs" Paid the Pastor

"I can't express in words how much I have been benefited by "More Eggs." I have paid my debts, clothed my children in new dresses, and that is not all—I paid my pastor his dues. I sold 42½ dozen eggs last week, set 1 dozen, ate some, and had 1½ dozen left.
MRS. LENA McBROON, Woodbury, Tenn.

1200 Eggs from 29 Hens

The "More Eggs" Tonic did wonders for me. I had 29 hens when I got the tonic and was getting five or six eggs a day, April 1st I had over 1200 eggs, I never saw the equal.
EDW. MEKKER, Pontiac, Mich.

160 Hens—1500 Eggs

I have fed 2 boxes of "More Eggs" to my hens and I think they have broken the egg record. I have 160 White Leghorns and in exactly 21 days I got 125 dozen eggs.
MRS. H. M. PATTON, Waverly, Mo.

$200 Worth of Eggs from 44 Hens

I never used "More Eggs" Tonic until last December; then just used one $1.00 package and have sold over $200 worth of eggs from forty-four hens. "More Eggs" Tonic did it.
A. G. THODE,
Sterling, Kan., R. No. 2, Box 47.

1368 Eggs After 1 Package

Last fall I bought a box of your "More Eggs" Tonic and would like to have you know the result. From January 1st to July 1st my hens laid 1368 eggs.
A. F. WHITE, Scranton, Pa.

126 Eggs in 5 Days

I wouldn't try to raise chickens without "More Eggs," which means more money. I use it right along. I have 33 hens and in 5 days have gotten 10½ dozen eggs or 126.
Mrs. J. O. Oakes, Salina, Okla.

Send Coupon

Every day counts! Send the coupon today for a full size package of "More Eggs" tonic. Order now and start your hens making money for you. You run no risk. A Million-Dollar Bank will refund instantly if you are not entirely satisfied. Profit by the experience of a man who has made a fortune out of poultry. Act NOW. Just put a dollar bill in with the coupon. Send for this bank-guaranteed egg producer and profit-maker NOW. Today!

E. J. Reefer, Poultry Expert
3748 Reefer Bldg., Kansas City, Mo.

Send me one full-size package of "More Eggs." Send this with an absolute Bank Guarantee that you will refund my money if this tonic is not satisfactory to me in every way. I enclose $1.00. (Either P. O. money order, your private check or $1 bill.)

Name .....

Address .....

Detection and Control of Round Worms

ROUND WORMS are among the most abundant and widespread intestinal parasites of poultry. Fortunately where proper methods are used, they may be easily controlled.

If your fowls, in spite of careful feeding, become emaciated and unthrifty, showing dry, pale combs and ruffled feathers, you may suspect round worms. Young birds are most severely affected and the presence of worms can be verified by killing one of the diseased birds and examining the lower part of the small intestine.

The worms often occur here in enormous numbers, sometimes completely filling the intestine. The worms are yellowish or pinkish white and the adults vary in length from 1½ to 3¼ inches. The female worms deposit vast numbers of very small eggs in the intestines and these pass out with the droppings. Healthy birds thus usually become infested with the worms through eating food or drinking water which has been contaminated with droppings containing the worms.

Round worms may be controlled by, first, treatment of the fowl in order to expel the worms and, second, disinfection of coops and runways in order to prevent reinfection.

Recent investigations by the Poultry Division at the University Farm have shown that tobacco dust fed in the dry mash is the most effective means of ridding the fowls of the worms. Where tobacco dust was used an immediate and constant improvement in the condition of infested fowls was noticed. The tobacco dust should be fed in the mash daily for a period of at least six weeks in the proportion of 2 per cent by weight. The tobacco dust has been found to be much more satisfactory than ground tobacco stems for the above purpose as it is more palatable and the dust is standardized as to nicotine content.

When infested fowls have been freed of the worms they should be removed to yards which are free from living worm eggs. All sweepings and droppings from the infected yards and houses should then be removed to a place to which the fowls do not have access.

The yards and houses should then be thoroughly disinfected, using a spray of corrosive sublimate (one ounce to 8 gallons of water). At least one gallon of the disinfectant should be used for every ten square feet of soil.

As an additional precaution against reinfection, all hen houses should be supplied with dropping boards and roosts, beneath which wire netting is placed in order to exclude the fowls from the droppings.

HAVE IN MIND AN IDEAL TYPE AND BREED UP TO IT. SUCCESS WILL FOLLOW!

Wherein Lies the Real Value of Caponizing?

A PROMINENT California poultryman submits the following views on the capon industry:

"The future of the capon is assured. The only wonder is that the idea has not spread more rapidly. I think the only reason is that poultrymen as well as consumers do not yet realize the importance of this branch of poultrying.

"With the market demanding constantly better eggs, and with poultrymen everywhere being urged to cull out and market cockerels in order to promote efficiency in feeding and do away with the sale of fertile eggs, caponizing offers the logical solution of the problem of marketing these culls.

"Once the public generally comes to realize the true delicacy and superiority of capon meat, there will be no lack of demand. It is as different from ordinary chicken as venison from beef. It possesses wonderful richness and dainty flavor.

"Perhaps the capon industry will eventually develop into a commercial branch in itself, professional caponizers and feeders buying up surplus cockerels and finishing them for the market. But whether this is true or not, it is inconceivable that such a great advance in poultry production should long remain out of general use. About half of the chickens raised are cockerels. In fattening them for the broiler market the poultryman spends almost as much for feed as would be required to mature a capon which grows from one-third to one-half larger and turns every particle of feed to account.

"I note that Orchard and Farm has devoted considerable space to this subject, and also carries regularly, in its display and classified columns, the advertisements of capon specialists and dealers in caponizing supplies. You are to be commended for your interest in this important subject."

The Himalayan Rabbit—*By Mrs. Leroy B. Hackett, President N. E. B. A.*

THE Himalayan rabbit is supposed to have originated in the Himalayan Mountains, from whence it takes its name. The breed owes its great popularity to its beautiful fur, which so closely resembles ermine that it is used as such in the manufacturing of ladies' and children's wearing apparel. Frequently the rabbit-fur is trimmed with real ermine tails.

The fur of the Himilayan rabbit will always be in great demand in this country especially, as it is pure white, very short and of fine texture; moreover, it holds its fur closely.

The Himalayan fancy breed has many followers and it is sure to increase in popularity. This rabbit differs from most other breeds in that the young are pure white, not getting the full black color on the nose, ears, feet and tail until they are six months of age. Another characteristic interesting to the breeders of the Himalayan rabbits is that they always breed true to shape and color and always have pink eyes.

Good Dispositions

There is no rabbit that appeals to one's sense of beauty more than the Himalayan rabbit, which is kindly, affectionate and likes to be fondled. They make excellent little mothers. Their litters consist usually of six; sometimes they kindle eight, but this is the exception.

They weight from four to five pounds, never more. Of course, being a small rabbit, they naturally are light eaters, which is a valuable feature nowadays.

The Himalayan rabbits are kept in a manner exactly similar to that employed with any other rabbit. They can be kept in any ordinary back yard if protected from the rain and raw winds. According to the Encyclopedia, they are the only real fur rabbit, but in these days nearly all rabbit furs are being used extensively. Still, the Himalayan fur will always rate first because of its fine texture and its resemblance to ermine. They are the only fur bearers that can be handled by children.

Try This One Man Stump Puller 30 Days FREE

Send No Money!

One Man Alone Handles Biggest Stumps!

Thousands of Kirstin Stump Pullers Now In Use!

All I ask is the **privilege** of sending you the Kirstin to TRY 30 DAYS FREE on your own stumps. I want you to **see** for yourself what a wonderful, easy-operating, fast-working, strong, substantial machine it is. When it comes, hook it to your biggest, toughest stumps. See how quickly and easily one man alone handles them. PROVE ALL MY CLAIMS! If—after 30 days' trial—you are satisfied keep Puller. If not pleased, send it back at my expense.

You don't risk a penny! Four easy ways to pay.

A. J. KIRSTIN, Gen. Mgr.

Kirstin One-Man Stump Puller

Single—Double—Triple Power!

ONE MAN ALONE handles biggest stumps! This feature has enabled thousands of farmers to rid their land of money-losing, land-wasting stumps. **No horses or extra help needed!** No digging, chopping or other expense! Kirstin's scientific leverage principle is the reason! A few pounds pull or push on handle exerts tons on stump. One man pulls big, little, green, rotten, low-cut, tap-rooted stumps—trees, hedges or brush. Clears an acre from one anchor. Works in swamps, boggy soil, thick, timber, or on steep hill-sides where horses can't work. Easy to move around field.

Read These Letters From Kirstin Users

We have given your Stump Puller thirty days' trial. It proves very satisfactory and it sure is a wonder. We are pulling down trees and stumps together, and it works about the best I ever saw. We are pulling mostly red and white Oak. *Mr. Ernest Walter & Son, Guttenberg, Clayton County, Iowa.*

Your puller works fine. 25 of my neighbors were present and watched me pull stumps. It pulled stumps we thought it could not pull. *Mr. E. A. Buckley, Bay Springs, Jasper Co., Miss.*

From what experience I have had with other machines, your machine is the best and cheapest of them all. *Lewis Packard, Gowen, Mich.*

I like my Kirstin. I have pulled old pine stumps as big as 20 inches. I have not hitched to anything but what has come. *Earl Rogers, Kelliher, Minn.*

Full Line of Kirstin Stump Pullers

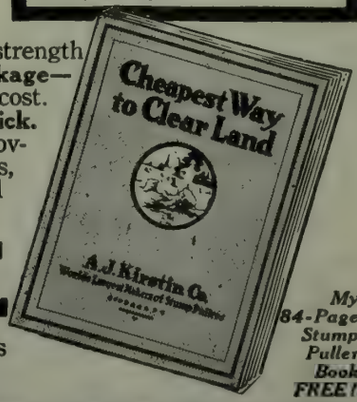
We make 14 sizes and models—including Kirstin One Man Clutch; Kirstin One Man Drum; and the speedy, strong, powerful Kirstin Horse Power—the best and most efficient Horse Power Stump Puller you can get.

One Man Pulls Big, Little, Green, Rotten, Low-Cut, Tap-Rooted Stumps

Cheapest, Quickest, Easiest Way to Pull Stumps!

The Kirstin weighs less and costs less. Has greater speed, strength and power. **Lasts longer! Guaranteed 3 years against breakage—flaw or no flaw!** Pulls stubborn stumps in a few minutes at low cost. Several speeds. Low speed starts stumps—high **rips 'em out quick.** Patented, quick cable take-up **saves time,** cable and machine. Government officials, university experts, land clearing contractors, thousands of farmers—ALL AGREE it is cheapest, quickest and easist way to pull stumps!

One Man Pulls Trees, Hedges or Brush



My 84-Page Stump Puller Book FREE!

Send the Coupon for My New Book FREE

Contains 84 pages of valuable land clearing information; tells why labor shortage need no longer prevent pulling pesky stumps; why millions of stumps ought to be pulled **right now** to release fine, rich soil for **more crops—more food!** Reproduces hundreds of letters from Kirstin users like shown above. Describes Kirstin One-Man Clutch Model, Kirstin One-Man Drum Model and Kirstin Horsepower Model. Shows how any Kirstin pays its cost in BIGGER CROPS and increased land value the first season—goes on making money **for years.** Shipment from nearest distributing point saves time and freight. Send coupon for the book and for Special Agents' Offer. Address me personally.

A. J. KIRSTIN, General Manager
A. J. KIRSTIN COMPANY
10 E. Morrison St., Portland, Ore.

One Man Moves Buildings, Pulls Out Stalled Automobiles, Wagons, Tractors, etc.

General Office and Factory, Escanaba, Mich.

A. J. KIRSTIN, *General Manager*
A. J. KIRSTIN COMPANY
240 E. Morrison St., Portland, Ore.

Dear Mr. Kirstin:
Without obligation on my part, please send me your New Big Catalog of Kirstin Stump Pullers; also Special Agents' Proposition.

Name.....

P. O......*R. F. D.*.....

State.....*County*.....

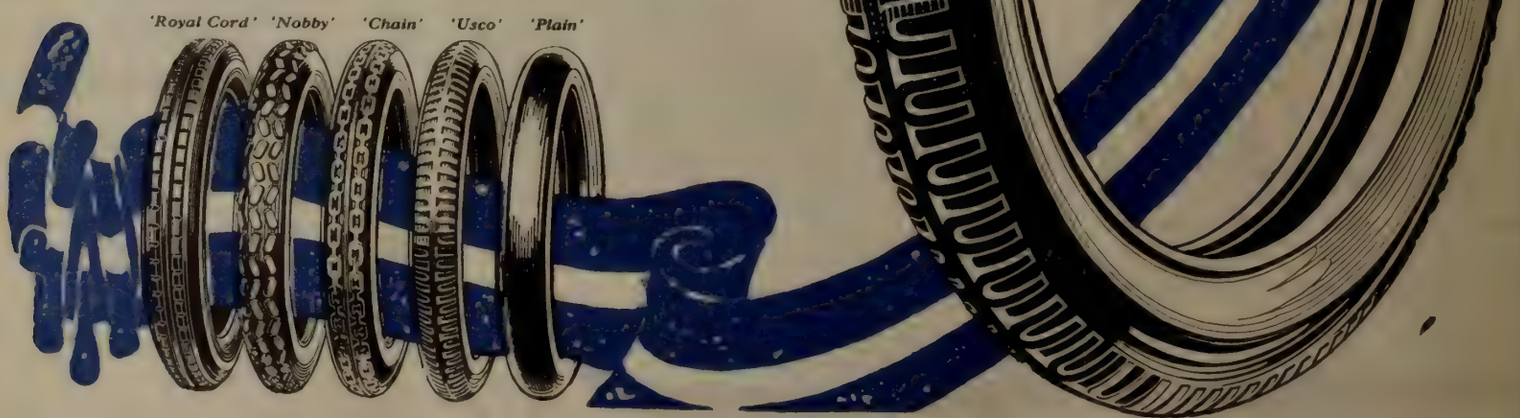
Right on the Job!

Like an axe "on edge", these good tires are always ready for service. Ready to pick up and carry on and keep *going* to the end of the day's work.

No fussing nor fooling with United States Tires. They are built for long hard service. They stand up under the roughest usage. They make no *excuses.*

There are five types of these burly, rugged, rough and ready tires,—one for every need. If you want extra work, and extra miles, and extra *economy*—

Stop at the nearest United States Tire Sales and Service Depot. There you will find good treatment and good *values.*



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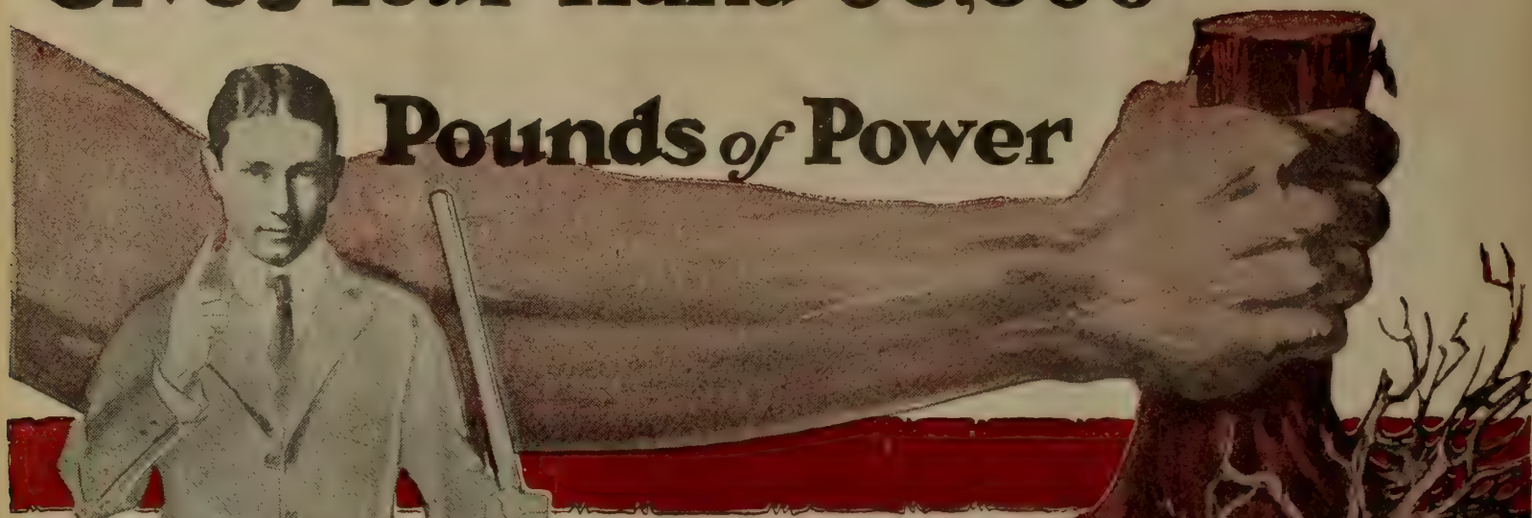
My K Hand Stump Puller

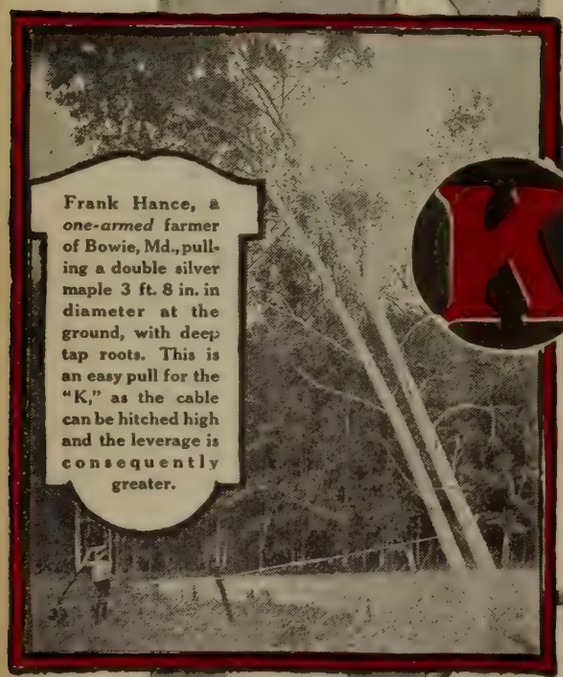
Gives Your Hand 96,000



Big stumps! stumps and trees with deep tap roots! any stump that can be pulled with the best inch steel cable!—you *alone* can pull with my "K" Hand Power Stump Puller—*without digging and without the expense of teams and powder.* I guarantee it. I refer you to U. S. Gov. officials. I give highest banking references. If you have stump land, the cheapest way of clearing it is with the

HAND POWER

K Stump Puller



Frank Hance, a *one-armed* farmer of Bowie, Md., pulling a double silver maple 3 ft. 8 in. in diameter at the ground, with deep tap roots. This is an easy pull for the "K," as the cable can be hitched high and the leverage is consequently greater.

How the "K" Pulls Biggest Stumps

The "K" works on the leverage principle of the ordinary lifting jack, except that the power is applied on a cog-wheel instead of a standard. 100 lbs. push on the lever develops a 48-ton pull on the stump—all an inch steel cable will hold. One man operates it alone—no teams to pay for—no walking.

A Mechanical Wonder

Made of finest steel—guaranteed against breakage. Weighs only 171 lbs.—easily carried or hauled about on its own truck wheels. Has two speeds—60 feet per minute for hauling in cable or for small stumps—slow speed for heavy pulls. *Works equally well on hillsides and marshes where horses can not* work

Owners Praise It

H. Sinclair of the Dept. of the Interior, a U. S. Gov. official, writes: "The stump puller is a wonder."

Ernest Thompson Seton, author and naturalist, declares the "K" "a great success."

Hundreds of owners write in, telling of pulling six- and seven-foot stumps, of pulling faster and pulling bigger stumps than by any other machine.

Special Offer We are making a special offer to get a "K" Stump Puller introduced in every neighborhood. Write us today for full information and for free book on Land Clearing and about our Wonderful Drag Saw.

The Fitzpatrick Products Corp.

Box 2

99 John Street, New York

Pacific Coast Office 182 Fifth St., San Francisco

H.G.Hunzicker of Foster, Wash., pulling a 24-inch fir stump with deep tap roots out of hard ground, without using powder or cutting any roots.

Tear Out and Mail Today

The Fitzpatrick Products Corp.
Box 25 99 John St., New York
182 Fifth St., San Francisco

Send me full particulars on your special offer and your free booklet on Land Clearing.

Name_____

Address_____

Our Editorial Policy

Orchard and Farm is a magazine of, by and for agricultural people. We believe that to the tiller of the soil is due the best that life affords. We believe that he is the bulwark of the Nation. His problems are our problems; his triumphs, our triumphs; his joys and sorrows, ours. To record his achievements and expose the duplicity of his enemies; to fight for and with him; to give him genuine help and practical information; to assist, entertain and inspire every member of his happy household—that is the policy of Orchard and Farm.

ORCHARD and FARM

ESTABLISHED 1888

Published Monthly by Country Life Publishing Company
1111 South Broadway, Los Angeles, California

"THE SILENT PARTNER OF THE SUCCESSFUL FARMER"

Around the Calendar

"How long does winter last in this section?" inquired a shivering visitor in a North-central State. "Don't know, Stranger," answered an affable native, "I've only been here eighteen months myself." And there was a certain Californian who, when Thanksgiving came around last month, asserted that he had nothing to be thankful for! Poor, misguided creature! Probably he will now dolefully assert that there can be no Christmas without snow and ice! He does not realize that in California the holiday spirit, like the crops, does not depend upon the weather. Merry Christmas!

Coming Next Month

WE'RE going to make 1920 the most successful year Orchard and Farm has ever known. In the first place, "right off the bat," the January number promises to be one of the biggest and best in the history of this magazine.

There will be another big feature article by Luther Burbank on "California Plum Varieties," with striking illustrations.

Under the subject, "Is the State Land Settlement Plan a Success?" the Editor will give his impressions of the famous Durham colony, based upon a personal trip of inspection and interviews with a number of the colonists on their farms.

Geo. P. Weldon, our Contributing Horticultural Editor, writing exclusively for this magazine, will offer in this one issue suggestions worth many times the cost of the year's subscription to any orchardist.

The interesting and instructive series on "Farm Management" by Professor R. L. Adams will be continued.

Another January feature to which our readers may well look forward with pleasure is an illustrated article on some of the "wonder-plants" being grown at the U. S. Plant Introduction Gardens, near Chico. Many of them will assume commercial importance. The article will also tell how cuttings and seeds may be obtained.

Albert Constant Jameson will recount another startling prank of the irrepressible "Steeley Twins," whose "Adventure in Aviation" he describes in this number.

That's all we will disclose now, but that is not half the story! You simply can't afford to miss this great issue!

And now we take this occasion to wish every single one of our readers (who now number more than 150,000) the brightest, happiest and most successful New Year, as well as the merriest Christmas they have ever known!

Jas. C. Kraglin

Editor.

HELP YOURSELF

By helping others! Last chance to win a valuable cash prize. Orchard and Farm will distribute $136 soon. Who will be the lucky winners in the Helpful Hint Contest? See important announcement on Page 29.

NOW WE KNOW BETTER!

People used to believe that Opportunity knocked but once. Now we know that he knocks every day, and he's one knocker that's appreciated. Meet him half way by turning to Pages 42 and 43 of this issue and reading what you find there. We offer this as a really helpful suggestion.

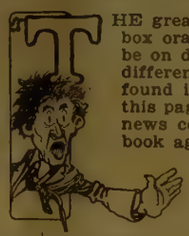
HOLIDAY BOUQUETS

Our California friends present us with many bouquets. We would like to publish more of them if space permitted. Here is a recent one: "I find your paper exceedingly helpful and instructive to me in my work on a fruit farm.'—R. O. Brandt, Corning, Cal.

That's Settled!

All the family's wondering
What Santa Claus will carry.
Sister Mary wants a ring;
It's roller skates for Harry.
Mother hope's she'll get a coat.
Josephine wants dresses.
Bill believes he'd like a goat—
So everybody guesses.
Everyone, that is, but Dad,
Always on his mettle—
He'll get just what he's always had,
And that's the bills to settle!

—Justin Nutt.



THE greatest question facing the farmer today——" began the soap-box orator, "Is the one," supplied Uncle Wiseacre, "that happens to be on deck at the present moment. Tomorrow it may be something different." Whatever it is, ten chances to one, the answer will be found in Orchard and Farm. A glance at the table of contents on this page will reveal how many knotty problems are answered in the news columns of this issue. But that's only half the story, as the book agent said, when he paused for breath. Tradition has it that just then Towser appeared on the scene with the result that to this day the last half of the agent's story (and trousers) is missing. We are all missing something of value if we do not read advertisements. In support of this contention, we've compiled again this month a list of questions, a number of which are almost certain to be clamoring for solution in your mind RIGHT NOW, and all of which are clearly and definitely answered in the advertising columns of the pages listed below. Certainly, then, you will either make or save money when you seek and find the answers! For example:

Nursery Stock, Sprays, Orchard Equipment, Seeds, Etc.

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SUREMILK

"A Sperry Product"

The Feed That Tells In The Flow

Your cow, to produce a full flow of milk the year 'round, requires a feed with *five times* as much carbohydrates as protein. Take alfalfa hay, for example. For the amount of protein it contains, alfalfa hay has only half as much carbohydrates as it should.

What your cow needs to make her a really profitable producer is SUREMILK—

A highly concentrated grain feed

It is rich in carbohydrates—containing nearly 64 per cent. It is very low in moisture, ash, fibre and protein—for alfalfa hay or other roughage will supply these more cheaply.

Remember this: just as alfalfa hay is the ideal roughage, so SUREMILK is the ideal grain concentrate. *Together*, they enable the cow to produce the greatest amount of milk with the least drain on her vitality and the least strain on your pocket-book.

STOCK AND POULTRY FOOD DEPARTMENT

SPERRY FLOUR CO.

STOCKTON · CALIFORNIA

"Converting Feed into Money"

The coupon below will bring you the new edition of our booklet, "Converting Feed into Money." Full of practical hints and profit-pointers—shows you what you should feed to keep your cows healthy and profitable. Send for this helpful booklet today—it's free!

Stock and Poultry Food Department
SPERRY FLOUR CO.
204 Weber Avenue, Stockton, Cal.

Please send me, without obligation, a copy of "Converting Feed into Money"—showing the true food-value of different stock feeds.

Name _____

Address _____

ORCHARD and FARM

VOL. XXXI. DECEMBER, 1919 NO. 12

What Does Christmas Mean to You?

By G. H. Hecke
Director, California State Department of Agriculture
(Written Especially for Orchard and Farm)

FARMERS OF CALIFORNIA, GREETINGS! We are now on the threshold of Christmas, 1919. Out of the stress and travail born of the war a new power has arisen! It is represented by the American farmer—the man whose individual efforts, applied collectively, overbalanced the scale and spelled victory for the Allies!

Today the American farmer can share, with the fighting men who went abroad, the laurels that victory brought. For it is universally conceded that the farmer and fruit-grower were potent factors in winning the war, and today it is just as certain that the same farmer and fruit-grower constitute the powers capable of re-establishing the balance of trade and commerce.

Today, as never before, the agricultural industry is standing between the world's millions and actual want. And it is conceded by the world's greatest economists that the only basic remedy for the advanced cost of present-day living is increased production of food!

No soldier ever grasped his musket with more enthusiasm that that evinced by the farmer when he set his jaw and went to the task of preserving the honor and integrity of our Nation on the world-wide field of battle. Yet our task is only half finished. We must arise; we must step now into our rightful place, and by unstinted production once more must re-establish the nation's balance.

Yet the task is harder in a measure at this time than under the conditions which obtained prior to the war. Farmers of California, today a spirit of unrest is rife throughout the country. Capital and Labor are striving each to gain its ends, perhaps in all issues not having the ultimate welfare of the country in view! It, then, devolves upon you, the agricultural element, in this perilous day of possible dissention, to put forth your every effort that the country may be restored once more to normal conditions, and that an era of good feeling and better understanding once more may prevail.

You are the backbone of the State and of the Nation! You have aided in tiding the country over the dark hours of trial in the past, and California has unbounded faith that she will not call upon you in vain at this critical hour when confusion reigns.

In this great era of advanced agriculture, the intelligent development of those projects which make for the agricultural progress of the State should be seriously considered by all who have the interests of the commonwealth at heart!

We must exclude the things that appeal to us personally at times and promote the things that vitally affect the people at large!

If we can impart to this latter-day agriculture the kind of vitality it should have in order to reap the maximum results for the common good—then and then only shall we have fulfilled the real duty which falls to us, whether as individuals or as a co-operative organization.

It matters not whether a man produces prunes, olives, celery or alfalfa, or whether he raises dairy cattle, poultry, or swine; the interests of the majority are the ultimate interests of the State and the Nation, and the great future depends more upon the relation of all these varied occupations to one another than the separate development of one great industry to the exclusion of another!

This is the day in which we find the solution of our many vexing problems embodied in these terms: "CO-OPERATION, COMMON SENSE"!

The keynote of the country's success today and tomorrow lies in organization and in greater production, and we know that when the roll is called, the American farmer may answer truly, "I have fought a good fight!"

Always in the glorious past it has been so and our State has abiding faith that it will be so always in the future. It is inconceivable that a class of men as progressive as California food-producers could fail their Nation in any crisis.

Greetings to you now for a happy Christmastide and a renewed year of increasing prosperity. California shall know that every farmer will exercise his powers to keep the State at the very top of the agricultural industry, and as a just and fitting reward, the State Department of Agriculture pledges to the California farmer its entire support and the benefit of its mightiest efforts that justice shall prevail and that California shall be for "OUR OWN" people—now and always!

THE "CHRISTMAS SPIRIT"—What is it? A mythical product of childhood's happiest fancies? Yes, and most of us are content to regard it as such.

But from the pulpits we are told that it has a far deeper significance, summed up in the words which mark, perhaps, the one straight road to happiness: "It is better to give than to receive."

But let us follow the thought a little further. There are wonderful possibilities in this subtle thing called Christmas Spirit! We find, to our surprise, that it may be applied to our everyday business, not only at Yuletide, but throughout all the days of the year. The community idea; the co-operative plan to which all Agriculture is turning; the "boost, don't knock" slogan of our progressive West—all these things are nothing more or less than Christmas Spirit!

But that is not all! Careful analysis of this remarkable and inspiring message, written especially for our readers by the Director of the State Department of Agriculture, shows that the writer sees in the self-same Christmas Spirit the Eastern Star upon which our food-producers must fix their eyes as their ultimate goal. He realizes that the eventual salvation of our nation; yes, even our civilization, rests upon the shoulders of the tiller-of-the-soil. He knows that after all is said and done, the fate of America depends upon nothing more or less than the interpretation by our farmers, of the Christmas Spirit.

Study carefully the brief article upon this page. It is one of the most significant messages Orchard and Farm has ever published, for at this glad season when the spirit of giving is abroad, it carries both a warning and an inspiration—a warning that Agriculture, as the one basic industry, must grasp the true Christmas spirit; inspiration in the assurance that Columbia, with such a firm foundation to stand upon, may always hold her head proudly, and high.—Ed.

Poultry Success on One Acre

You have heard many theories as to what may be accomplished on one acre of land. Here is the true story of a woman "little-lander," who found happiness in developing a paying poultry venture. Surely it is none the less inspiring and interesting than an account of the methods of a "big rancher." Orchard and Farm likes to publish both kinds of "stories."

THERE is money in poultry for the man, and especially for the woman, who will "dig it out." If the Orchard and Farm readers are in doubt, I will tell of my success on one acre of land.

We came from an Eastern city seven years ago. My husband's health was poor then, and he had been advised to live in the country. We were both inexperienced in farming and not "flush" as to capital.

Therefore we decided to buy only one acre. As soon as we were acquainted, different neighbors told us how foolish we had been to buy only one acre of land.

I can say now that I make more off my one acre than many others I know who have 20.

Cure for Discontent

My husband soon found employment. Then I found I had too much spare time in which to brood over the "better luck" of my city sisters and really became lonely for the city. Thinking perhaps it would help me some if I got a few chickens, I bought six Leghorn hens and one rooster. At that time I thought one must have a rooster in order to secure eggs. One day, however, we became hungry for a chicken dinner and the rooster went into the pot. And my hens laid just as well, if not better!

I dont' know why I picked out the White Leghorns, but I guess it was because they looked so pretty and white. I did not know one breed from another then. These six hens did so well for me that I decided I really liked chickens. Then I subscribed for Orchard and Farm and soon found some hints on taking care of baby chicks. The following year I bought 50 day-old chicks.

Her Interest Aroused

When, out of that lot of 50 I raised 28 pullets, I considered myself very fortunate. By this time I was growing enthusiastic about the chicken business and every year I kept getting more, until last spring I bought 500 baby chicks. Of course, I had to have a brooder house to hover so many. I must say I have had really good luck in getting my chicks, for they always proved to be good layers and I have had very little sickness in my flock. With good blood there are only three essentials to egg production. These are: Comfort, exercise and proper food.

Two years ago I thought I was doing well when my net profit was $2.50 per hen. But I had read of others who made more than that, and I said: "If others can do it, I can." Later on I heard about the Hogan culling system and Mr. Week's feeding system. Now I will say, follow the Hogan system of culling and the Week's feeding system; add good, common sense and a little elbow grease and I'll assure you your chickens will be profitable if you have good stock.

Last year my hens net a little better than $3 per hen.

Provisions for Green Feed

I am a great believer in green feed but one must have plenty of water. I have a 5 horsepower motor and, of course, for just one acre, it gives me an abundance of water. I have a patch of alfalfa and a patch of mangel wurzel beets and Swiss chard. In the mornings I always feed chard or beet tops and in the evening I feed alfalfa, but I always put it through a cutter first. If I happen to find I am running short on greens, I sprout barley. I have the mash and whole grain in front of my chickens at all times.

Prevention of Lice Infestation

I can truthfully say very seldom do I find a louse on any of my chickens. I have a fine "bathing" place fixed in their feeding shed and about once a month I mix a cup of sulphur with the dirt and sand and that's about as good a louse-killer as I know of, for the hens dust themselves right in the sulphur.

Now, for my winter greens, I have sown barley in among the alfalfa and I have also planted kale and rye.

I whitewash my chicken houses twice a year to keep them sweet and clean. To about every 100 hens I give a yard 12x20 feet, so they can have plenty of fresh air and sunshine.

Cure for "Bumble-foot"

My roosts are 2x3 inches and I give the hens the 3-inch side up. Since I have used the wide roosts the chickens have not been bothered with "bumble-feet" any more. (Bumble-feet, I think, are caused only by narrow or round roosts.)

I have had a fine garden all summer, which I cared for myself, for my husband only comes home a few hours on Sunday. Some of my watermelons this year weighed over 22 pounds!

I have a family orchard "coming on," with a pear tree only two years old, which I call our "King" for it bore this year 15 of the best Bartlett pears we ever ate. We also have plenty of berries. I do all my own irrigating, look after all my chickens, do my own house work, and still find time for reading and fancy work. I just wanted to show the readers of Orchard and Farm what one woman can do on one acre of land. Now I will say there is no house in any large city that I'd care to trade for.—Mrs. C. J. Mailey, Wilton, Cal.

A "Going" 2-Acre Hay Ranch

Both the articles on this page were entered in our Helpful Hints Contest and may win cash prizes. More than a dozen other articles and shorter items in this issue came to us in this manner from subscribers. Contributions will be accepted until January first. Be sure to read the announcement on Page 29 of this issue. Contest closes this month.

NATURALLY, a magazine like Orchard and Farm must devote a great deal of its space to the interests of the "big" ranchers. But I am going to tell you the story of a little-lander who has had considerable success on a miniature farm.

Two years ago I bought two acres of land about 10 miles east of Los Angeles. One acre was set out to Valencia oranges 1 year old, one-half acre was in Navel oranges 10 years old, and one-half acre uncultivated.

The following spring I bought two Hampshire pigs 2½ months old, for $5 each. One was a barrow and the other a sow. I raised these pigs until they were 9 months old, buying all their feed.

I then traded the barrow for a Berkshire sow of the same age. At 13 months of age each sow had a litter of pigs. The Hampshire had six little pigs, all of them sows, and the Berkshire had eight, six of them being sows. Up to the time the little pigs were 6 weeks old, the mothers had cost me for feed an average of 9 cents a day apiece, or $2.70 a month ($5.40 a month for the two). I now had had the pigs one year and they cost me $64.80.

At this time I sold the Hampshire sow and six little pigs for $75, and the two little Berkshire barrows for $6 each. I was able to get a much better price from the Berkshires as they were of registered stock. This made $87 for the pigs I had sold. Taking the maintenance cost from this amount, I had $22.20 left besides my Berkshire sow, which was valued at $50, and the six little sows, worth $36, making me a profit of $108.20 on my two little $5 pigs. Then I bought three more Berkshire sow pigs at $6 apiece.

In the meantime I sowed alfalfa between my tree rows and when the little pigs were weaned, started feeding alfalfa. Now the little sows are 5 months old. I still have the 9 others, and they have cost me only 4 cents per day each for feed from the time they were weaned. This reduction has been accomplished through having my own green feed.

The old sow will have another litter in about two months.

I now have a 16x16 pen for the little pigs and two brood pens and houses. I am building a 50x200-foot pen now for all the sows to run in. This pen is being constructed on my vacant half-acre. I shall also have two or three more portable brood pens that can be moved about in clean places from time to time, and a portable pen to place on the alfalfa to use for the little pigs on pasture.

I feel that with this good start with pigs of good stock and my ability to get corn and pumpkins at reasonable prices from the neighboring farmers, and with my own alfalfa well established, the pigs are going to pay for my two acres in a very short time.

I have also sold enough of the alfalfa to pay for keeping my trees cultivated.

Looking into the future a little, I figure that when my young sows are 13 months old, if each sow averages a litter of six pigs each (which will be 54), and if at six weeks of age I sell half of them at $6 apiece, or a total of $162, this money will help to buy the feed to fatten the other half.

Those 27 will bring me at 8 months of age about $30 each, weighing around 200 pounds. I will be clearing about $675 on the pigs from the nine young sows, in addition to the pigs from the old sow.

I feel I have made a good investment. In this way I think I can make good on a small acreage. I also have 35 young hens which I have raised this summer and now have my winter garden well along.

I have not mentioned the additional income that will be coming from the oranges in a couple more years.—Mrs. Charles Grove, Rivera, Cal.

Why Johnny Doesn't Worry

They's pun'kins in th' cellar, and apples, too, a heap,
And Ma has made some mincemeat. Ummm! Why, I kin hardly sleep,
Fer smellin' all th' pies an' things that she has stowed away.
(And Dad gives special helpin's, too, on good ol' Christmas day!)

Jest see that turkey-gobbler there, a struttin' 'roun' so proud.
Ef he knew what was comin', say—he wouldn't talk so loud!
Suppose I'll get a drumstick—but th' wishbone goes t' Sue.
(Don't see why girls should allus have th' best of things, do you?)

But I don't care, because I know there's plenty t' go 'roun';
I do feel kinda sorry, though, fer folks that live in town.
They's lots of city boys and girls, Ma says, won't have a treat
Because it costs so much t' buy all these good things t' eat.

I wish that all of them could live, as I do, on a farm!
Dad says he never COULD see that th' city had much charm.
I know Ma never worries how t' fill OUR pantry shelves.
And I guess th' reason is because we raise it all ourselves!

—Jason Wells.

To Improve Farm Loan Service

THE greatest stumbling block in the way of complete service to the farmers through the Federal Farm Loan Banks may soon be removed, if the campaign now under way under the leadership of President D. P. Hogan of the Omaha Bank bears fruit.

It is quite generally agreed that $10,000 is not a sufficient sum for the maximum amount that may be loaned to any one member of a farm-loan association. This limit has always been insufficient, but especially is the sum inadequate under present costs of production and modern farming methods, usually involving a quicker and larger turnover and heavier risk than in former years.

At the public hearing early in November of the Banking and Currency Committee of the United States Senate, the farmers were given an opportunity to present their case and definite assurance was obtained that early consideration will be given to their proposal that the maximum loan limit be immediately increased to $25,000.

Speaking of the proposed change, Mr. Hogan recently said: "This subject is of the greatest importance to every farmer in the United States. The securing of this amendment will enable every actual farmer to procure his farm loan with a co-operative system which will mean a net annual saving to him of from one-half to one and one-half percent, as well as the opportunity to secure long time and the privilege of making amortized payments.

"As the law now is, the tenant farmers in high priced land districts and in the ranching districts, where the units must be correspondingly larger, is deprived of the opportunity of buying a farm and getting his loan at cost.

"The friends of agriculture have for years deplored the increase of landlordism. The opportunity is here to get substantial results. The time has come for opening the doors to every tenant farmer to own his farm and every present farm owner to enlarge his unit to the size where the children may be kept employed on the home farm. Every actual farmer in America ought to be provided with the opportunity of borrowing his money for the upbuilding of the farm unit under the co-operative system, which furnishes its money at actual cost." Are we with Mr. Hogan? We'll say we are!

Specialization Versus Diversification

Professor R. L. Adams
Attorney for the Defense.

With a full realization that "Specialization" has a host of friends in California, Professor Adams of the Farm Management Department of the University comes boldly to the defense of "Diversification," and wherever our sympathies lie, it must be admitted that he presents some very strong evidence. This is the second of a series of articles on the subject of "California Farm Management," written especially for Orchard and Farm by Professor Adams.—Ed.

GENTLEMEN OF THE JURY: Is it safe for any farmer to carry all of his eggs in one basket?

NOBODY can deny that diversity in farming operations is a mighty good thing for the beginner in agriculture or the newcomer to the State who may be unfamiliar with California methods. This has been demonstrated again and again. Many an experienced farmer; that is, experienced in Eastern methods, has found himself unequipped to meet California requirements. "Old timers" rather enjoy pointing out ranches that have proven the Waterloos of newcomers.

For instance, farming dry land grain ranches to wheat or barley under a 10 or 12-inch rainfall, coming, as it does, all in one period, offers a good test of one's ability. During a year of scanty rainfall the resulting yields may be so small as to spell bankruptcy. On the other hand, with many crops grown under irrigation, timely attention to the various details incident to the handling of the crop often means the difference between success and failure.

More Strong Arguments

Planting of sugar beets in the warmer portions of the State must be completed before settled hot weather comes, or the work of a small insect is liable to cause "blighting" and serious reduction in the quantity and quality of the final crop. Thinning of many fruit crops at the proper time is often essential to the production of the best quality fruits. Spraying, sulphuring and similar pest-control measures must be undertaken in time and in the right way. Specialization, therefore, demands experience and expert knowledge. It is a wiley siren, luring the novice sometimes to destruction!

If there are several major activities comprising the farm business the chances of some of them returning a profit is sufficient insurance of ultimate success to deserve the careful consideration of anyone accustomed to risk the dangers of the one-crop method.

That diversification, on the other hand, may not offer a means of helping all farmers is also a known fact. Future studies may modify the findings of today, as more investigation is given to farm management practices in the newer agricultural sections, and to the methods of farmers specializing in single products. Diversity, as now recommended, provides an opportunity to increase fertility, to keep labor constantly employed, and to market a variety of products. As a matter of fact, the present tendency of working farmers is towards more specialization, with greater concentration on producing and properly marketing one major product. This involves, also, some escape from year-round routine and avoids multiplicity of duties and scattering of effort. Many economists believe that future findings will show that there is a well defined place for specialized agriculture and individual attention to poultry, fruit, dairy products, grain, hay and beef. Admitting these favorable findings in regard to the character of "specialization," let us consider the actual conditions.

Here's Exhibit "A"

The trend of modern thought is shown in a recent conclusion published by the United States Department of Agriculture to the effect that "Diversity of the farm business is, as a rule, an important factor of success in farming. A medium degree of diversity, sufficient to give good seasonal distribution of labor, complete utilization of land and a considerable variety of sale products, is better than extreme diversity or a low degree of diversity."

Suppose, however, we line up the advantages against the disadvantages of diversification as now advocated. It will be seen that the diversified type of farming generally offers more economical use of equipment, a better utilization of crops (in that some can be fed to livestock), less waste of by-products, safety in the increased number of money-producing factors, and, lastly and most important to California, an opportunity for better farming methods. This latter factor gives an attendant increase of the crop-producing power of the land by means of crop rotation, incorporation of green manure crops, clean tillage and elimination of pests.

Mixed farming, as diversified farming is sometimes called, does, however, have some disadvantages when viewed in comparison with specialized farming. By specialized farms we mean those farms or "ranches" as we prefer to call them here in California, which obtain at least 50 per cent of their gross returns from one main product or industry. We have specialized farms, producing wheat or beans or sugar beets or alfalfa or poultry products or dairy products or beef. California farming tends toward specialization rather than diversification. Let us make the comparison by studying specialization.

Advocates of specialized farming point out that it involves the use of a minimum of land. For instance, the man who would require forty acres of good, productive land in order to make a living in diversified farming, can make as much from twenty acres of fruit, or even from ten acres. That five acres will, in many sections, suffice for a family-size poultry plant is a proven fact.

Less equipment is needed for specialized farming. Better facilities are available for the handling and marketing of the product, because the specialized industries tend toward community centralization. Thus the selling end is helped out by the incoming of buyers attracted by offerings in wholesale quantities.

Usually the work on a specialized farm is not so exacting in its requirements. A barley farmer, for instance, who is raising nothing but barley will be very busy during November, December and possibly January and February putting in his crop. From then on, with the exception of perhaps a rolling of the fields, he will be chiefly engaged in watching and sometimes "cussing" the weather, doing odd chores, working for other farmers or watching the market reports; in general, filling in his days at none too profitable labor pending the time when the crop is ready to harvest. Harvest, hauling off and marketing consume perhaps the greater part of June, July and August.

But is this condition really favorable? Even if this grain grower works during all these months he can be busy but seven-twelfths of the year. Similarly, the fruitman who specializes in one crop finds himself with considerable leisure on his hands.

Anyone who doubts this will find it a very interesting study to make a list of the different operations required in caring for his proposition, together with the time required, the amount of work stock and the equipment and men needed to perform necessary operations within the time limits available for the work. This "calendar of operations" or work-schedule will offer an interesting guide for future work as well as an illuminating pointer as to what proportion of the work is really productive.

Appearances Are Deceiving

Farm managers use the term "productive work unit." By this they mean the amount of work that an average work horse or an average man can accomplish in a ten-hour work day at productive labor. In reviewing the time spent in labor on the average farm, the investigator will be startled when for the first time he determines how large an amount of this time is spent upon inconsequentials, and how many non-productive units enter into the year's expense.

The best farm manager is the one who is able successfully to manage a mixed farming proposition. He will there find a real test for his capabilities in organizing men and work, crop planning, crop utilization, management of crops and stock and disposal of the final farm product.

While this matter of diversification is before us, let us inquire into the result of investigations conducted in Eastern sections where agriculture is sufficiently diversified so that an equilibrium in practice has been obtained. Federal investigators have, by means of farm management surveys, made studies of the various factors affecting farm profits. Twenty or thirty surveys have been made in different parts of the country, the results of which are now before me. These include in location, the cotton fields of the South, the cut-over land of Wisconsin, Minnesota and Michigan, the fertile corn belt lands of Iowa, Indiana and Illinois, the blue grass region of Kentucky, the high altitudes of Utah under irrigation farming, the reclaimed desert lands of Arizona and various communities in Texas, New Hampshire, Oregon, Missouri and Pennsylvania. In all of these reports two or three facts are constantly reiterated and emphasized. One of these has to do with the effect of diversification upon farm incomes. In general, it was found that diversification increases farm profits.

And Here's the Proof

Haskell, reporting a Brooks County, Georgia, survey, found that the matter of diversity was forcibly brought to the attention of the farmers of the South by the decline in the price of cotton following the outbreak of the European war. His findings as to the effect of diversification show that farms having an average of less than two major industries or crops received 15 per cent less returns per year than farms having from two to four industries represented in the farm's activities. Farms having an average of over four showed 16 per cent greater returns than those having the average of two to four.

A Pennsylvania survey reports its findings in dollars rather than in percentages, with "labor income" as the unit of measure. Labor income is the amount of money left over at the end of the year (if there be any left over) to reimburse the operator for his time and labor. The sum is obtained, in the computations of the farm management investigators, by deducting from the total receipts all expenses, including depreciation, interest on the investment at a fair rate and the value of any labor of the family not included under expenses.

In these instances, with farms averaging 90 acres in size, the labor income increased with diversification from an average of $663 for 79 farms where but one or two major industries were being followed to an average of $888 for 125 farms having four to five important enterprises.

Recapitulation

We will rest our case in the presentation of seven objections to the one-crop system, as reasoned out by Bradford Knapp, a keen observer of the influence of different factors in farming.

First, the system depends upon market and crop conditions of the one crop. Failure of crop or failure of market alike brings serious disaster.

Second, it does not provide for the maintenance of soil fertility.

Third, it fails to provide for a sufficient livestock industry to consume the waste products of the farm and make its waste lands productive.

Fourth, it does not provide for a system of farm management under which labor, teams and tools may be used to the fullest advantage.

Fifth, it brings return in cash but once a year instead of turning the money over more than once a year.

Sixth, it does not produce the necessary foods to supply the people upon the farm and keep them in health and strength.

Seventh, it limits knowledge, narrows citizenship and does not foster home building, but does encourage commercial farming.

Applied to Local Conditions

Assuming that these objections are of sufficient importance to demand greater diversification here in California, let us consider how it may be brought about.

In replanning the operations on a

(Continued on Page 28)

Mr. Weldon Explains What to Do and---

By George P. Weldon
CONTRIBUTING HORTICULTURAL EDITOR OF ORCHARD AND FARM
Pomologist, Chaffey Junior College of Agriculture

ALTHOUGH pruning has been practiced as long as fruit trees have been grown, there are still those who are inclined to let nature take her course in shaping the tree. And although certain well grounded principles of pruning are recognized by nearly everyone, there are still some things to be learned and we haven't yet seen the man of balanced mind who claims to know everything on the subject.

Like all other orchard operations, the practice of pruning must necessarily be modified to meet the needs of a particular locality or a particular fruit.

To say that all trees can be pruned alike is to acknowledge ignorance regarding the habit of growth of different species and varieties. To say that a peach, an apple or an almond will respond in a similar manner to any method of pruning is to risk instant challenge from investigators. To say that one rule fits all cases, regardless of fruit bearing characteristics, or soil and climatic factors, is to stretch the imagination much further than the writer cares to do.

Thoughtful Study Required

A close study of the bearing characteristics of a tree becomes necessary in order to practice intelligent and helpful pruning. Recently I had a conversation with an orchardist who is an agricultural college graduate, and a close observer—one who is not in the habit of talking except when he has something to say. He made this remark regarding a certain well-known variety of peach. "If you shorten the new growth of this variety you are up against it, as all the fruit comes near the tips of the twigs." For fear that he might be mistaken, and in the absence of first hand information which I hope to obtain later, I do not wish to give the name of the variety of peach, but believe my informant was right.

If so, here is an illustration of my point. A certain variety of peach, unlike the Elberta, which seems to delight in having the fruiting wood shortened, resents the practice and refuses to bear well except near the terminals!

Before leaving this point, it may be well to emphasize the fact that soil fertility, moisture and climatic condition also may have their influence on the bearing habits of a tree, and possibly under different conditions of soil and climate this peach would respond to cutting back in the same manner as Elberta.

Pointers on Pruning

With this brief introduction, which will substantiate the writer's admission that he does not know everything about pruning, a few facts will be given which it is hoped will aid the readers of Orchard and Farm to conduct their pruning operations in a manner that will contribute towards financial success. The reader will please bear constantly in mind the fact that pruning is not a panacea for all the ailments of the orchard tree, but that it is rather only one of six exceedingly important operations, the others of which will only be mentioned in this article. These are: spraying, thinning, irrigation, fertilization and cultivation. Failure to perform any one of these operations as well as pruning, when needed, may mean loss instead of profit.

First Season Pruning

The ordinary tree when set in the orchard as it comes from the nursery, is what we have learned to call a "one year old whip"; that is, it is a tree the top of which has had one year's growth in the nursery, and which may or may not have lateral branches. The habit has been to remove laterals from one year old nursery trees when they are given their places in the orchard row. While this is not absolutely necessary, it gives the root system a better chance to respond quickly; furthermore the stem, which should not be longer than twenty inches, will in most cases develop an abundance of growth from adventitious buds which occur on one year old wood, but which might fail to grow in the case of a two year old whip.

A maximum height of twenty inches is recommended, because if the trunk is higher, the danger of sun-scald is very greatly increased, and when sun-scald takes place it is sure to be accompanied by its "partner," the flat-headed borer. Sun-scald in itself may not be serious but flat-headed borers practically pronounce the doom of any tree which they infest. Therefore, if either extreme of high heading or low heading is practiced the latter is by far the safer.

And What Next?

Having planted the trees in the orchard, and having cut them back to a height of twenty inches the next attention in the way of pruning is not called for until after the growth has become well started. If planting has been done early, as is best, there should be sufficient growth sometime during the month of April or early May so that a permanent framework of scaffold branches can be selected as a basis for the future tree. Two courses are now open. The tree can be let alone and the pruning done at the beginning of the second season's growth (this method has been generally practiced in the past) or summer pruning can be resorted to. The latter course is preferable, according to experiments that have been conducted by the University of California, and according to all experiments coming under my observation.

Summer pruning the first season should involve the pinching back of all undesirable growth. Usually when the terminal bud is removed by summer pruning, the growth of the branch is checked and other branches receive a greater share. If growth starts again the process should be repeated. It is unwise to remove the new growth entirely except in extreme cases of very succulent sprouts. The foliage is needed to prevent injury from sun and borers, and it is also needed to feed the tree.

Plant food is manufactured in the leaves and there is nothing among the elements of plant food found in the soil that is available for the use of the tree until the leaves, which are the tree's "factory" for making food, have acted upon it.

Therefore, save plenty of foliage to feed the tree. It is well known that the large, deep-green foliage performs a greater service at less expense to the tree than the light-green, succulent sprouts which evaporate large quantities of water.

Summer Pruning Profitable

Knowing these principles, it is easy to understand why summer pruning will pay. In starting a tree, the object is to develop the framework from three or four strong, well-placed branches, and to force all the growth possible into them. If this growth is inclined to be too strong terminally, pinching back of the framework branches also may be practiced. These branches should be selected with respect to their size, strength, shape and placement. The larger, stronger and more shapely branches are the most desirable, but frequently, in order that proper spacing may be secured, it is necessary to sacrifice larger twigs throwing the growth into those that are smaller but more desirably placed.

When feasible, there should be a space of at least 6 inches between the points where the lowest and the topmost branches grow from the trunk. These branches are selected so that the tree will be symmetrical. In the case of a three-branch framework tree the ideal placement would give branches equally distant from each other and emanating at a like angle.

The grower who has done all his pruning during the dormant season will be surprised when he tries summer pruning to find that not only splendid growth but also perfect symmetry can be attained, results that would be difficult or impossible of attainment under the dormant pruning system.

Highly Desirable Type of Peach Tree

Note the bearing wood, extending from the forks near the ground to the tips; also the wide spread of branches. Trees such as this are easily sprayed and the fruit is readily reached from short ladders. This desirable shape was developed by moderate cutting-back and careful thinning out of surplus wood.

Second Season Pruning

If summer pruning, as outlined, has been practiced during the first season, there will be little pruning to do before the tree begins growth the second season. It will consist in thinning out some of the branches that have been pinched off the previous season and which are not needed, and a moderate shortening of the three or four framework branches. If they have made a long, rank growth, quite heavy cutting back so that about fourteen inches is left, will be desirable. Summer pruning the second season again will consist of pinching off rank, superfluous growth after it has become well started; possibly the terminal growth of the scaffold or framework branches if it becomes too rank. Again, sun-scald must not be forgotten, and all pruning should take into account the disastrous effects that may come from exposing the bark to the direct rays of the hot sun.

When Bearing Begins

Most deciduous trees will bear some during the third season. Peaches, apricots and plums often give a good crop. Summer pruning will increase the early bearing tendency. A well-known rule that has been given to orchardists for many years is: Prune in winter for wood growth and in summer for fruit.

At this stage of growth of the tree, it is necessary to emphasize as strongly as possible the necessity of avoiding the cutting of large branches. Many an orchard is hopelessly ruined because of large wounds and stubs as a result of the removal of large branches which should have been taken out while the tree was younger. Large cuts must be made close in, as a stub will never heal, no matter how much paint is wasted on it.

Another fact that is not commonly known is that a cut on the top, or upper side of a branch, will not heal as readily as one underneath. Therefore, upper cuts should be avoided as much as possible. These things being true, it becomes necessary to exercise the greatest care in the removal each season of all branches that will interfere later, when cutting them will endanger the life of the tree.

Heading Back

If the simple points given are followed pruning can be easily, safely and successfully done by any orchardist. Heavy cutting back may become necessary in case of neglect or under certain conditions of soil and climate. Old peach and apricot trees that are otherwise worthless may be temporarily rejuvenated by "heading in." Pruning each season should be done with the idea of avoiding the necessity of such drastic treatment.

Wonderful Berry

Already famed as a berry producing State, Oregon is making new bids for honors with the "Ticonderoga Blackberry." This is a very sweet variety, containing far less seeds than other kinds. Therefore, it is unexcelled for making jelly and preserves, requiring less sugar than is usually the case. An extensive planting of Ticonderogas near Portland has yielded three crates to the hill, which sold, in 1919, for $2.40 per crate, a total return of $4896 per acre. Six hundred and eighty hills (8x8) can be set to the acre. The above returns were secured two and one-half years after setting the roots.

They can be planted in chicken runs and trained upon fences and roofs, making shade, and at the same time yielding heavily of fruit.

What Not to Do in Pruning Fruit Trees

Upper, left—Pruning-wounds, such as the one shown here, will never heal. Many a tree dies prematurely because butchers, not pruners, have "amputated its limbs" and left such conditions as this.

Upper, right—Apricot tree allowed to grow too tall. All fruit spurs are well above the ground and this makes picking, spraying and other necessary operations more difficult. Fruit from such trees is small and unprofitable. Moderate heading back and thinning out of surplus wood will prevent this condition.

At the left is shown an example of decay, a result of removing a large branch and leaving a stub. The arrow indicates the condition that may be expected when such carelessness is practiced. A look into the future is often profitable.

The illustration at the right shows what happened when a cherry tree was started with too many branches. Trees like this are subjects for the removal of large branches, which is dangerous and results in the death of many trees.

Lower, left—Neglected pear trees. Without pruning, trees may live to produce fruit year after year. In cases of extreme neglect, as the one shown in the illustration, a type resembling the forest tree in its natural state may result.

Lower, right—An apricot tree with great spread of branches developed by heavy cutting back. In this case, topping has been carried to the extreme. While various orchard operations are more or less facilitated by such a method of pruning, there is reason to believe that production is materially lessened.

An Adventure in Aviation---

A Short Story by Albert Constant Jameson

Illustrated by "Hal"

WITH mingled feelings of relief and anxiety—relief because of the sudden lull in the noises emanating from the attic, and anxiety for that which the suspicious period of quiet might portend, "Ma" Steeley dropped down upon the couch and with a deep sigh lay her head upon a pillow and closed her eyes.

While any day was likely to bring fresh and stirring episodes to relieve such monotony as might creep into the Steeley household, it was the rainy days that Ma had learned particularly to dread. And Ma was not without sympathy. In fact, the entire community unanimously voiced the sentiment that fortune had smiled upon it in placing the Steeley twins in the center of a 320-acre farm, where the shock of their daily activities could be absorbed without more than an occasional ripple penetrating beyond the boundary lines.

This dispensation of Providence, however, did not offer much relief to the widowed mother of the irrepressible pair, for she represented the pivot around which radiated all the multiform interests of Shadow Hills Farm, and in connection with the twins' adventures, as well as all business activities, responsibility rested heavily and inevitably upon her shoulders. And particularly did she feel the weight of it on such days as this when, with the boys' 17-year-old sister away on a visit, and her one trustworthy, if somewhat shaky, prop thus removed, Ma was forced to find space within the comparatively narrow confines of the big, comfortable farmhouse for the day's developments.

On this particular Saturday, with the rain falling in a steady drizzle, the scene had shifted early to the attic. Secure in the comforting thought that everything reposing in that delightfully mysterious realm was either already broken or discarded as useless, Ma had gone about her morning's work with a cheerful disregard of the head-splitting crashes which occasionally emanated from the regions above, even though at times the plaster seemed in imminent danger of being dislodged and showered upon her head.

Apprised by telephone that Sister Josephine would soon be home, she had thankfully taken advantage of this temporary lull to ease her throbbing temples and snatch a well-earned bit of rest. So quickly, in fact, did her tired brain respond to the unusual and inviting situation, that she soon forgot her anxiety over what might happen next and dozed off into the hazy nothingness of an afternoon nap.

THE unusual quiet, however, by no means denoted a cessation of activities. A peep into the attic would have found the twins engaged in most earnest discussion.

"She did, too," asserted the yellow-headed member of the partnership, his insistence, no doubt, necessitated by the distrust born of his well-known tendency towards exaggeration. Only half convinced, he of the black curls demanded further details. (Some strange trick of Fate had given one of these boys of 9 the attributes of a true brunette, while the other was very fair of skin and hair, with eyes to match.)

"Aw, did you SEE her, Davey?" demanded the dark-haired twin. "Did she REALLY drop right through the air, an' an' ever'thing? Aw, honest, ain't you jest jokin', Dave?"

"No, I ain't jokin', Larry Steeley. I did, too, see her, that time Uncle Walt took me to the fair, when you couldn't go on account of cuttin' the tail off'n the hobby-horse. She went way up about a million feet in a balloon, a hanging by her knees, and then she let go and her paraskoot opened up and she came floating down jest as easy as—as—a——why, she never jolted a bit when she landed. It was just like a feather, floating! And the people all cheered and they gave her a lot of flowers, and Uncle Walt said she got seventeen hundred thousand dollars—er-er something like that—every time she did it. Why it was as easy as pie."

"Gee, that must be great! I sure wish we had one of those paraskoots, Davey. We could climb way up in the sycamore tree or get on top of the barn and jump right off and float down as easy as anything. Gee, wouldn't that be fun, though? Maybe, if the wind was blowin' we could fly right on over to town or to Fred Smith's father's farm."

"Maybe we could even fix it up with a little car," amended Davey enthusiastically, "with water and biscuits like the boys in 'Cast Away, or the Pirate's Revenge,' only we would float through the air instead of on the ocean wave. And we could take along cornsilk and smoke way up there while we was floating along, and sleep and eat, an'-an'—ever'thing! Maybe we could put a engine in it, and fly right on over to Australia or Graustark and harpoon elephants and find buried treasure!"

But the vaporizings of Davey's imagination were cut short by the inevitable desire for action which characterized his brother's more practical, if less ingenious, nature. It was Larry's uncanny ability to translate into deeds the products of Davey's dreams that had earned for the twins the questionable reputation they enjoyed. The present discussion seemed to furnish most interesting possibilities.

"But this paraskoot thing, Dave—didn't you say it was jest like a umbereller?"

"Yeah, only it was tied down so's it wouldn't turn inside out. That was all the difference. It wasn't much bigger than a umbereller, either."

A brief period of deep thought on the part of both the boys seemed to develop quickly into a remarkable understanding, and without even entering into further discussion, they began, as though in perfect accord, the collection of various kinds of material from different parts of the house.

Mrs. Steeley's nap having progressed into deep slumber, the theft of her silk umbrella from the lower hall closet was a comparatively easy matter. While Davey was sneaking quietly up the back stairs with it, his partner in adventure lost no time in securing a ball of heavy twine from the kitchen and a large basket from the pantry. Thus equipped they soon fell busily to work again in the attic.

Each steel tip of the parasol frame was tied securely to the handle. Then, while Larry wired the basket tightly, Dave began a search for a suitable jumping-off place. Inspection of all the attic windows disclosed an ideal combination afforded by one dormer, which opened onto a sloping balcony roof.

** * * The first crash was followed by the descent of a half-dozen bullet-like objects upon the hood of the car. * * * The enamel was cracked and several dents * * * made in the polished bonnet.*

The equipment being now in order, both boys lent their efforts to removal of the window sash, which for some reason best known to the builders, had never been equipped with hinges or weights, but merely nailed in place with blocks.

"I was the one that thought of the idea," asserted Davey, while he tugged and strained at the window. "I ought to get the first ride."

"You never did!" retorted his brother, as he pried loose one block with a much-prized antique paper knife, removed from his grandfather's trunk as the handiest instrument for the purpose, and soon twisted entirely out of shape and all hope of reconstruction. "You never did think of the idea. Jest because you was the one that saw that lady jump at the fair is no reason why you should get the first ride. I was the one that figured out how to make a paraskoot, and you know it."

The argument had waxed very warm before the obdurate window finally was removed. Pushing the umbrella carefully before them, the two amateur aviators after a preliminary survey of the surrounding fields and roads to make sure they were not observed, wriggled through the opening and emerged upon the slippery roof. It was still drizzling and the boys had difficulty in maintaining a footing. They held tightly to the edge and gazed down to the ground, which seemed miles below.

Larry displayed sudden interest in a distant scene. "Oh, lookit! There's Fred Smith's father's new tractor-engine, plowin' right in the rain way over there in the field. See it?"

Davey, somewhat white of lips and unsteady of hand, nodded. It was with difficulty that he removed his fascinated gaze from the ground far below to follow his brother's pointing finger. However, he immediately displayed great interest in the tractor and there ensued a lengthy argument as to its power, where it was bought, whether it cost a hundred thousand dollars or only ninety thousand, and how fast it could travel.

Even the most minute details of the tractor, however, could not furnish an indefinite topic of conversation, and almost simultaneously, the eyes of both boys reverted to their recently constructed ship of the air.

"Well, why don't you start?" demanded Davey. "You was talkin' so loud about wantin' to be first. I've been thinkin' about it, and I believe you DID think of this idea. You know Ma says we shouldn't be selfish and I ain't going to insist that I deserve the first ride. So I'll sit back here on the window sill, and after you float down you bring the paraskoot up here again and then I'll go."

"Huh," retorted Larry, "I never said I thought of the WHOLE idea. You had jest as much to do with it as I did. Anyway, you don't weigh quite as much as I do. I'd jest as lief let you go first." (This last with a burst of enthusiastic generosity.)

SO interested did the boys become in this new argument that they failed to observe the rapid approach of a racy looking roadster upon the highway.

They would instantly have recognized the car had they happened to notice it among the various machines that were passing in both directions. For, many times before (with increasing frequency each week, it seemed), the same roadster had brought sister Josephine home from various picnics, dances and other social functions.

And Josephine was indeed a passenger this rainy day. Snugly ensconced under a furry robe within the rainproof curtains of the low-hung car, she shared to the fullest extent with its handsome young driver the thrill of its power, as the big chain-wrapped tires sent puddles of water spraying towards both sides of the road. Perhaps it was the freshness of the cool, rain-washed air that had brought the roses to her cheeks. Be that as it may, it was certain that she made a very attractive picture beneath her little black fur hat, and it is no wonder that her companion leaned a bit closer towards her and felt an intoxicating desire to open the throttle and feel the full strength of the roaring motor.

As they neared the big farm house, however, the needle of the speedometer dropped back to "30"; then "20" and finally registered "15." The driver continued on the fascinat-

(Continued on Page 18)

MOTORIZE THE FARM

AFTER doing much of the market hauling of thirty-two farmers around Eden Prairie, Minnesota, with a motor truck on Goodyear Cord Pneumatic Truck Tires, Mr. C. P. Page states: "I would not use solid tires again under any consideration. Hills, mud and storms don't stop the big, tractive Goodyear Cords. Their cushioning is saving truck repairs and depreciation. They also are saving gasoline and oil. I now haul more milk and other loads in less time, find the work far easier, and note that the pneumatics save our roads. Several people have adopted them as a result of my experience with Goodyear Cords."

THE experience described above affords an excellent example of what pneumatic truck tires are accomplishing for farmers. Every limitation hitherto placed on the farm use of motor trucks by solid tires has been removed with the perfected pneumatic tire. For this reason, Goodyear's pioneer work in developing cord pneumatic truck tires has been extremely opportune; it has led to the more extensive use of farm trucks during a serious scarcity of farm labor. Now, farmers are finding it extremely advantageous to employ Goodyear-Cord-equipped trucks with other time-saving motor units and, thus, to motorize their work quite completely. Special information concerning the use of pneumatic-tired trucks on farms may be obtained from the Motorize-The-Farm Department of this company, at Akron.

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MADE IN U.S.A.

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For Growing Clover

Farmogerm is the safest, easiest and most economical assistance, within your reach, for growing clover If you inoculate seed with Farmogerm, you can not only grow clover on soil that heretofore would not give a successful stand, but you can greatly increase the amount of clover that you are now raising on any land. Farmogerm furnishes to the clover millions of nitrogen-fixing bacteria, on the presence of which the welfare of clover depends. Farmogerm will supply any deficiency your soil may have in these vital bacteria.

Farmogerm is the ONLY seed inoculant unharmed by age. It is shipped to all parts of the world, and is as active after two years as on the day it was made. No other inoculant has this ability to be FRESH and VIGOROUS in spite of time.

Farmogerm bacteria remain fresh and vigorous because of its patented glass and rubber stopper, which can be used ONLY BY FARMOGERM. This stopper lets the nitrogen-fixing breathe air. Remember, Farmogerm is not like any inoculant you have ever used.

Farmogerm has been made since 1908. It furnishes high-bred bacteria as carefully selected as pure seed. Inoculants vary like seed, some good and some impure. A score of state experiment stations testify that Farmogerm is pure.

Clover, when not inoculated, frequently dies out. Inoculation with Farmogerm is the best insurance of a good yield.

Buy Farmogerm from your regular seedsman. If he offers you a substitute, use coupon to order direct from us. There is no substitute for Farmogerm, and we will fill your order the day it is received, shipping by parcel post or express.

Prices:

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One-acre size	2.00
Five-acre size	8.00

Seed Dealers—Remember, Farmogerm is the only inoculant that does not deteriorate with age. No bad stocks. Write for our proposition. Dept. S No. 80 Lafayette St., New York.

Earp-Thomas Cultures Corp.

Farmogerm is prepared for Alfalfa, Clovers, Vetch, Cow-peas, Soy Beans, Peanuts, Lucerne, Peas, Beans and all legumes.

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Gentlemen:
Enclosed find $..... (stamps, money-order, cash or check) for.....size bottle of Farmogerm to inoculate..... seed. (Name the crop.)

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Neither alfalfa nor orchard cultivation can be conducted advantageously without an efficient irrigation system. Now is the time to install your system, as all indications point to much higher prices in the very near future. Don't delay, but write today for literature and any information you may require on the subject of Irrigation. The advice of our experts is yours for the asking.

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Fenner Manufacturing Co.,
306 Ship St., Portland, Ore.

To Teach Chickens to Roost

ALMOST any one can raise chicks successfully nowadays; at least, to the age when they are feathered and large enough to leave the brooder. The feeding problem some years ago was surrounded by mystery; to day it is no problem at all.

The necessity of feeling one's way in the dark, as it were—compounding and mixing corn-meal doughs and similar concoctions—is done away with, and instead we have the prepared chick-foods, labeled and guaranteed to do everything but the manual labor. And even this is laid out in easily-understood directions, distributed free with the feeds.

But how many poultrymen, breeders of long standing included, know the proper way of teaching the chicks how to roost? How many of them can accomplish this step without a serious loss? And why can they not do it? Because the average poultryman does not take time to study out the problem and adjust the appliances to fit the individual style of houses or coops, as the case may be, in such a way that crowding is made impossible and the consequent mortality reduced to a minimum.

We must even deal with the man who uses wrong methods and in addition, has no patience with the poor youngsters which cannot be expected to think and know the right from the wrong.

True enough, the chickens are very contrary and will do everything but what you wish them to do; they will not "stay put" on the roost-stick no matter how you coax and how much you swear; they simply will not do it because it is new to them. But should they be blamed for the fact that they were brought up by a "wooden hen" and do not know the ways of any other?

All this trouble is unnecessary, as I have proved on my own place. It would be difficult to lay down a definite rule for all conditions. Therefore I will simply explain the methods I practice in teaching the youngsters how to roost. I can hardly call it teaching, because I do not coax and am not obliged to swear. I simply have my roosting outfit so constructed that the chicks must either roost or stay outside in the cold.

Style of Coops

I use small coops for the purpose—3x6 feet in dimensions, built on the style of the "Cyphers" outdoor brooder coop; it will not be necessary to go into the details of construction, as almost everyone interested in poultry has seen the style referred to either in diagram or in actual use. The chicks are put into their quarters straight from the incubator and by the time they are 6 weeks old, are so accustomed to the coop that one could not drive them away from it, because they know of no other place to go.

It is very important to accustom the chicks to the coop or house before attempting to roost them; otherwise, you will not be able to do anything with them. When the youngsters are fairly feathered (six weeks is the proper age for Leghorns), take the brooder away from them on some convenient night and substitute a flat roost. A rather sudden change! Nevertheless it will work like a charm!

Construction of Roost

I must tell you how to make the roost: From 1x3 material, cut two pieces the length of the coop (inside measurements, of course); then cut away on one end of each piece enough to make the end flush with the floor when the strips are laid on edge. This part goes next to the entrance door and prevents the chicks from getting underneath the roost. Now nail common laths, one inch apart, on the 1x3 joists. The length of the lath pieces should be the exact width of the coop. The laths should never be placed more than ONE INCH apart; otherwise the chicks will manage to squeeze through and thus be trampled to death!

Now, when you take the brooder away and place one of these roosts in each coop, the same results will be attained with 100 or 1000 chicks. Simply go away and let the chicks work out their own salvation. That's all there is to it!

You should expect that there will be "somthing doing" the first evening. There will be a doleful chorus as all the chicks raise their voices in protest against the outrage; but do not sympathize with them. Leave them alone to grieve over the loss of the brooder and do not allow your heart to soften when you hear the yelping voices, because if you lose patience and try your hand at putting the chicks in the coops you will only complicate matters. The chicks will bunch up more or less when placed in the coop one at a time. Therefore, simply leave them alone and they will go in of their own accord, because they know of no other place to go!

When the chicks have been roosting for about a week, pull off every other lath and give them a few nights to accustom themselves to this new arrangement before attempting to move them into a house equipped with the regular 1x3 or 2x3 roosting pole. If you do this, there will be no trouble in transferring and all chicks will take kindly to the new contrivance the very first night.

This roosting scheme (would you call it that?) works fine in my yards and I do not see any reason why it would not be helpful to others. And think how much profanity it will do away with.—Arthur R. Schroeder, Mayfield, Cal.

Large or Small Brooders

There is a growing sentiment among poultrymen, "great and small," in favor of brooding chicks in small lots. Last month Helen Temple told of her success in brooding small lots of chicks in a home-made cheese-box brooder. We have the following communication on this subject from W. D. Swartzel of San Gabriel, Cal., whose article, "A Hen for Every Tree," in the May, 1919, issue of Orchard and Farm, was awarded the second prize in the first Contest for Helpful Hints.—Ed.

I have raised thousands of chicks in large and small flocks; in 100-size brooders and long, hot-water brooders; also in the large brooders, caring for 1500 in each flock.

After using all kinds of systems, I have come to the conclusion that the "100-size" brooders give the best results (either the long, hot-water system with different compartments, or the small 100-size kerosene brooders which can be connected up with gas, thus cutting down the labor.

In brooding in large flocks, I averaged raising 75 per cent, while in small flocks I averaged 85 per cent. I not only raised 10 per cent more chicks, but the cockerels weighed 1½ pounds or more, one to two weeks sooner than when raised in large flocks.

With the small flock there is little trouble due to crowding at bed time; and it is "some problem" to break up crowding after they get the habit!

Artificial rearing of chicks presents problems difficult for the poultryman to solve. Small flocks may be more trouble to care for, but require a smaller investment in chicks, as one can raise 10 per cent more. Also, there are fewer runts and one can dispose of the broilers sooner.

Magnificent Large Specimen TREES

which will produce immediate effects.

Spruce
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Cedar
Irish Yew and 10 other varieties of Yews.

Also fine stock of **Mahonia (Oregon Grape). English Laurel, Boxwood** Full assortment of **Broad Leaved Evergreen,** deciduous trees, shrubs, etc.

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PISTON RINGS

Our booklet—"To Have and to Hold Power"—will help you know piston rings. It will explain clearly the causes of lost compression, lost power, faulty lubrication, and carbon deposits. It will save you time and money. Free on request.

McQuay-Norris Manufacturing Co.
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He Practices What He Preaches

"I HAVE never had a moment's worry about my boy since he joined that poultry club," said one enthusiastic father who has good reason to appreciate this great educational movement. "And the best part of it is, he showed us all up when it came to making something out of chickens." And he laughed good-naturedly, although it was plainly to be seen that he was ready to boost the club idea with all seriousness.

The keystone of success in this movement is laid when the youngster is given the profits he makes to call his own and to deposit or invest.

Vocational instruction in agriculture is becoming an exceedingly important phase of public education in California. Poultry projects at the homes of high school students are being made a part of regular courses of instruction. High school club members and vocational students carry the club work into the elementary schools.

How one leader in vocational education is setting an example for the teachers he is instructing throughout the State is shown in the work of Samuel H. Dadisman at Davis, Cal. Mr. Dadisman has a poultry project quite similar to that which high school students are conducting. In speaking of his personally conducted project, Mr. Dadisman says:

Mr. Dadisman Feeding His Blue Andalusians

By trying out in his own back yard the methods he advocates in boys' club work, this trainer of teachers secures first-hand information on which to base his conclusions, and profit and enjoyment as well.

How They Were Fed

"We started in last fall with Blue Andalusian chickens which were in full laying form by the first of the year. Our egg record during the month of January was 80 per cent for the entire flock. It cost us about 21 cents a month to keep a hen, and 66 chickens kept in the back yard netted us a profit of $150.45 from January 1 to August 1. We fed a grain mixture consisting of 2 parts milo maize, 2 parts wheat and 1 part barley. The ration was balanced by letting the chickens have access to a mash. The houses we used were of the knock-down type, built by the teacher-training classes. In addition to keeping the laying hens, we rai ed 121 chickens. Blue Andalusians do not breed true to type; therefore a dark cockerel had to be bred to light hens, and vice versa, else many chickens would have had to be discarded on account of color.

"There is a good market for all the Blue Andalusians one can raise, and with eggs at 50 cents a dozen, there is a handsome profit in raising chickens in the back yard."

Reports from students who are members of poultry clubs with poultry projects indicate intense interest in the work and very satisfactory profits. What a young girl can accomplish is indicated by her letter, which follows:

"I keep pure bred Barred Plymouth Rocks and Single-comb Rhode Island Reds. In setting my hens I remove broody hens to nests on a mound of earth in a well drained sheltered spot away from the other hens. Setting hens should not be disturbed by the others. When the chickens are 48 hours old I give them a little grit and about 12 hours later I give them some steel cut oats or oat meal and perhaps some hard-boiled eggs crumbled up with dry biscuit. I feed small quantities four or five times a day for the first six days.

"At the end of the first week I begin feeding fine cracked mixed grains morning and evening with mash during the middle of the day. The mash consists of wheat bran, rather coarse corn meal and 10 per cent beef scrap.

"This spring I hatched 135 red chicks and 110 Rocks and raised nearly all of them. I sold 30 young cockerels and have on hand 195 chicks at present, some of them very fine pullets. I have sold 59 settings of eggs this spring. During the four months from February to June I sold 164 dozen eggs to neighbors, while we used 42 dozen on our own table. During this period my Rhode Island Reds laid 1076 eggs while the Barred Rocks laid 853 eggs."

A net return of $2 a hen over a four months' period is the record of another poultry club member who, about the middle of January, mated 15 White Leghorn hens with a standard-bred male of the same variety. During the ensuing four months these 15 hens laid 1108 eggs. Of this number 50 were placed in the incubator, from which 41 chicks were hatched and all except five were raised. The owner marketed six cockerels for $3.60. He now has on hand 30 chicks.

He sold 304 eggs for hatching purposes for $30.50, as well as 54½ dozen market eggs for $20.70, making a total income from his small flock of $54.80. The cost of feeding the flock during this time was $21.40, which leaves a net return of $33.40.

Properly developed and fostered, poultrying is one of the most profitable side-lines in which most farmers can become interested and, at present there is hardly any activity of modern farming which will pay better than the maintenance and production of good poultry.—Charles L. Schufeldt.

Got 113 Eggs Instead of 3

Says One of Our Readers

One of our readers says, "'More Eggs' increased my supply from three to 117 eggs." Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs" and you will be amazed and delighted with results. "More Eggs" Tonic has DONE wonders for 400,000 chicken raisers all over the country. It will do the same for YOU.

Million Dollar Bank Guarantees Results

Profit by the experience of a man who has made a fortune out of poultry. A million dollar bank guarantees if you're not absolutely satisfied, your money will be returned on request and the "More Eggs" costs you nothing. "More Eggs" will double this year's production of eggs, so if you wish to try this guaranteed profit-maker, write E. J. Reefer, poultry expert, 3749 Reefer Bldg., Kansas City, Mo., for $1.00 package of "More Eggs" Tonic.

Poultry Raisers Everywhere Tell Wonderful Results of "More Eggs"

"More Eggs" a Godsend

I received your "More Eggs" Tonic and found it was a great Godsend. I was only getting 12 eggs a day, and now I am getting 50 per day. MYRTLE ICE, Boston, Ky.

1200 Eggs from 29 Hens

The "More Eggs" Tonic did wonders for me. I had 29 hens when I got the tonic and was getting five or six eggs a day. April 1st I had over 1200 eggs. I never saw the equal. EDW. MEKKER, Pontiac, Mich.

160 Hens—1500 Eggs

I have fed 2 boxes of "More Eggs" to my hens and I think they have broken the egg record. I have 160 White Leghorns and in exactly 21 days I got 125 dozen eggs. MRS. H. M. PATTON, Waverly, Mo.

$200 Worth of Eggs from 44 Hens

I never used "More Eggs" Tonic until last December; then just used one $1.00 package and have sold over $200.00 worth of eggs from forty-four hens. "More Eggs" Tonic did it. A. G. THODE, Sterling, Kans., R. No. 2, Box 47.

Send Coupon

Every day counts! Send the coupon today for a full size package of "More Eggs" Tonic. Order now and start your hens making money for you. You run no risk. A Million-Dollar Bank will refund instantly if you are not entirely satisfied. **Profit by the experience of a man who has made a fortune out of poultry.** Act NOW. Just put a dollar bill in with the coupon Send for this bank-guaranteed egg producer and profit-maker NOW. **Today!**

E. J. REEFER, Poultry Expert,
3749 Reefer Bldg., Kansas City, Mo.

Send me one full-size package of "More Eggs." Send this with an absolute Bank Guarantee that you will refund my money if this tonic is not satisfactory to me in every way. I enclose $1.00. (Either P. O. money order, your private check of $1 bill.)

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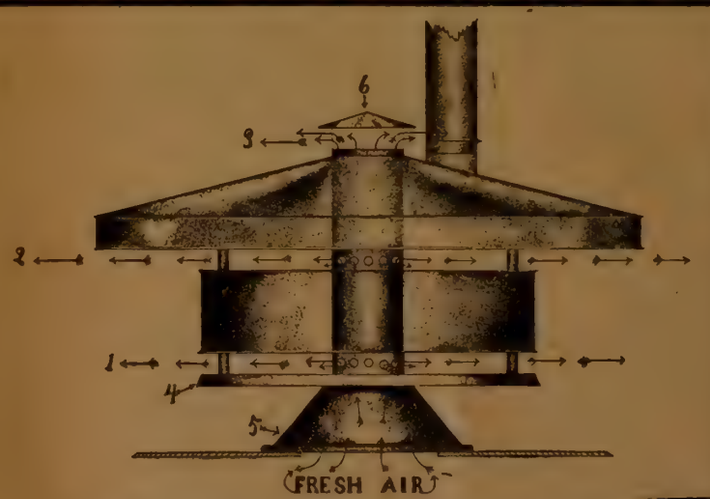


WINTER EGGS

Are being laid by well-raised pullets.

Chicks brooded without abundance of pure fresh air will not lay until next Spring.

Our TRIPLE VENTILATING BROODER STOVE combines perfectly blended heat and ventilation. Our Catalogue No. 19 tells you all about it. It's free. Send for it today.

KRESKY BROODER STOVE COMPANY

PETALUMA, CAL.

Guesswork Won't Grow Geese!

"THE goose hangs high," but so does any other kind of poultry these days. It is said that an Eastern visitor returned home with the news that California raised more geese than any other State, not knowing he had merely heard the "honk" of thousands of "flivvers" on the highways.

Prominent California breeders of geese assert that there is a potential market in this State for a great many more geese than are now produced here. It is believed that considerable expansion of this important, if less prominent, branch of poultrying is justified.

The New Year goose is in higher favor with many families than the turkey. Indeed, when properly cooked, goose meat is not excessively greasy and is very delicious. With more properly-fattened young dressed geese in the markets, no doubt the demand would be rapidly built up. Not that a great many geese are not produced and consumed in California; but only the surface of the business has been scratched, many poultry authorities believe.

Geese are raised chiefly in the South and Middle West—Kentucky, Tennessee, Missouri and Arkansas being the principal supply sources. During the decade ended in 1910, the total number of geese declined 22 per cent, largely because of the lack of cheap pastures and the limited demand for goose feathers and flesh.

Breeds of Geese

The Toulouse, Embden, Chinese and African are the most popular American breeds of geese, the first two greatly leading the others. Occasionally the eggs are used for cooking, but generally geese are kept only for meat and feather production. Practically all the geese in this country are raised in small flocks on general farms.

As grass makes up the bulk of feed for geese, it is doubtful whether it pays to raise them unless good grass range is available during the summer. It is stated by poultrymen who have investigated the subject, that irrigated pastures, where high-yielding forage crops such as Sudan grass or Napier grass can be raised, furnish an ideal setting for profitable commercial goose raising.

A pool of water for bathing and recreational purposes is a desirable feature.

The market for geese is not so general as for chickens. This point should be considered in undertaking the raising of geese. The demand and the price paid for geese are usually good in sections where goose fattening is conducted on a large scale. This is not generally the case in California. In parts of the South, geese are bought up in great numbers as "feeders," like livestock, and fattened for market. One noted feeder is said to drive the geese many miles to the railroad, first driving them through tar and sand to "shoe" their feet for the trip. The amount of corn a fattening "herd" of geese can consume is astounding to the average layman.

Rugged and Hardy

Geese are hardy birds and need shelter only in stormy weather. An open shed or an old barn usually is satisfactory for this purpose. From 4 to 25 geese may be kept on an acre of land, although under most conditions 10 is a fair average for ordinary grass. Wherever possible, the geese should have free range during the grass season. Southern plantation owners keep geese to kill the weeds in the cotton fields.

Geese are fed a ration to produce eggs during the latter part of the winter so that the goslings will be hatched by the time there is good grass pasture. The eggs may be hatched by either hens or geese. Some breeders prefer to raise all the goslings under hens, as geese sometimes become difficult to manage when allowed to hatch and rear their young. The period of incubation of goose eggs varies from 28 to 30 days.

Goslings do not need feed until they are 24 or 36 hours old, when they should be fed one of the mashes recommended for chicks or goslings; or a mash or dough of two-thirds shorts (middlings) and one-third corn meal, which can be made of equal parts shorts and corn meal, with 5 per cent of beef scrap added after the goslings are six weeks old. Bread and milk make an excellent feed for young goslings.

A Valuable Asset When Properly Handled

Fine grit or sharp sand should also be available. If goslings are to be fattened, the ration should be changed to one-third shorts and two-thirds corn meal by weight, with 5 per cent of beef scrap added, while a feed of corn should be given at night. Other grains may be substituted if desired.

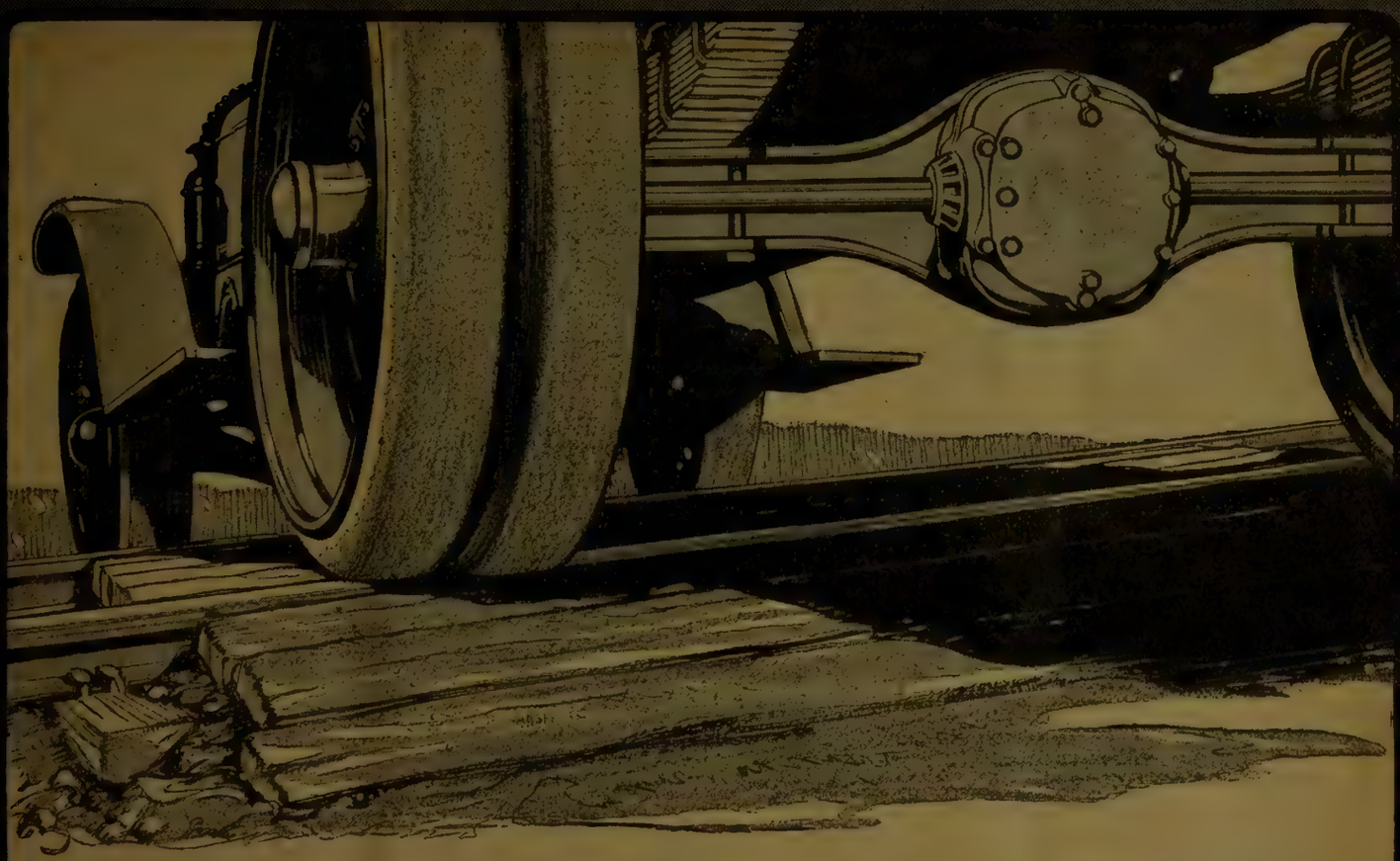
Most geese breeders not selling to professional feeders do not confine their geese for fattening, but feed them freely a few weeks on a fattening ration before they are to be marketed. The geese may be confined for two or three weeks and fattened, but some green feed or vegetables should be added to the ration.

Feeding the Adults

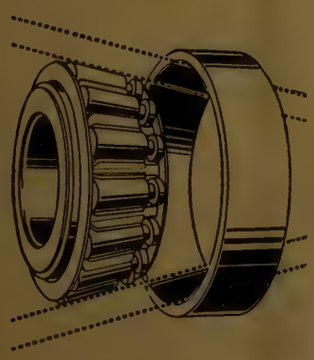
Adult geese may be fed for egg production on a mash of one pound of corn meal, one of bran, one of middlings or low-grade flour, and 10 per cent of beef scrap, which is fed in the morning; equal parts of corn and wheat, or corn alone, may be fed at night. Grit and oyster shell should be kept before geese when they are laying and may be provided at all times to advantage. A constant supply of drinking water should always be available under protection so that the geese cannot get their feet into the water. Cut clover, hay, alfalfa, silage, cabbages, mangel-wurzel beets or any waste vegetables may be fed during the winter months.

The methods of those who make a

(Continued on Page 31)



If It's Mounted on Timkens



Remember the *tapered* shape of the Timken Bearing. That tapered design has brought about the superiority of performance, which in turn has led to the adoption of Timken Bearings by the best motor car, tractor and truck builders of America.

The rear wheel of your farm truck hasn't quite as hard a job as a front one, but it needs Timken Taper just the same.

A little skid, a graze of the curb or sidewise blow from a rut or a stone gives a tremendous end thrust to the bearing. Measured in pounds the end thrust that comes from a two-inch drop of a loaded truck would startle you.

And a trifling looseness—which is bound to come with a bearing that has no take-up for wear—the take-up that Timken Bearings do have—means a considerable play at the circumference of the wheel and rapid wear on tires.

Every year adds to the list of truck builders and truck owners who appreciate the advantages of Timken Taper.

It doesn't pay to overlook the things that don't cause trouble.

THE TIMKEN ROLLER BEARING COMPANY
Canton, Ohio

TIMKEN TAPER

EDITORIAL DEPARTMENT

Cheerful Chat Among Farm Folk

Fodder and Chaff

A good cure for the blues: Eat more greens.

A stack of hay is a whole lot safer property than a stack of chips.

They say the bull is half the herd. As far as that goes, if you take the bull away from "bullshevik," there's nothing much left but his whiskers!

If folks would raise more food and less disturbance, old Hicost would get a terrible jolt. Under present labor conditions about all most farmers have been able to raise is wages.

So long as Mother and the Flivver don't go on strike we can manage to worry along, but we must admit that if THEY ever get the fever and balk, we might as well give up the ghost!

Farmers and weather forecasters both gamble on the weather. The only difference is that when the farmer makes a bad guess, he loses. The weather man is paid just the same.

There's a lot of local color in a certain new novel. Why, in one chapter the hero turns "green with envy," is "blue" because his girl goes away, "goes white with fear," get "black with anger," "turns a sickly yellow" and "reddens with embarassment." The humble chameleon can now take a back seat.

We asked a fellow yesterday what he thought had become of all the cats. Seems to us cats aren't as plentiful as they used to be. He said, "Well, you know there is a much greater demand for rabbit meat than there ever was before." Now we wonder what connection that has with the subject!

A traveling-man tells this story to prove that there are two sides to every question: One time I was standing on the corner and a man who must have been having quite a visit with Tom and Jerry, came up to me.

"I shay m' frien'," he said, "Can y' tell me how t' get t'other shide d' sthreet?"

I turned him around and pointed across the way. "See," I replied, "It's right over there."

"No 'tain't," he insisted. "I was jesht over there an' a feller shaid 'twas over here!"

A whole lot depends on the point-of-view. For instance, ask the question: "What's music?" The high school girl will say, "Jazz on a ukulele." The long-haired genius will answer, "Shopang's Rapsudy" or something like that. The banker may think its the tinkle of dollars on the marble counter, while music to the farmer may be the lowing of his cows out on the green hillsides. For some there's music in the gurgling of a stream; for others in the roar of city traffic. The mother may think there's no sweeter music than the chatter of childish voices. If we'd all remember that the other fellow may have a different point-of-view, there'd be less discord and more harmony all over the land.

Merry Christmas! See What Santa Brought!

"GREAT victory for the farmers," flared the newspaper headlines when Congress persisted in its determination to repeal the daylight saving measure over the President's veto.

And when the clocks were turned ahead again and Old Sol permitted to catch up with himself, the day was hailed as the dawn of a new era, "when the voice of the farmers outweighed even that of the Nation's labor."

Without investigating as to how large a percentage of our food-producers displayed any concern one way or another over this much-discussed law, we do not have any difficulty in discovering a laugh in the situation. If the farmers have any cause to rejoice, certain it is that they will not be permitted to forget it. Oh, no, Congress will see to that.

Just why this act of kicking the football of war-time legislation in the farmers' direction should be regarded as so wonderful a concession, is not made clear. Yet, from a perusal of press reports originating in Washington, one is convinced that the estimable body which makes our laws has, by the mere act of scuttling the daylight saving scheme, handed the farmers the greatest gift in its power to bestow.

But how long can Congress thus paternally pat the farmer on the head, tell him what a good boy he is, and prevent his noticing the elephants and asking to be taken into the big show? The farmer WAS a good little boy during the war and did as he was told, even though he got some tremendous jolts by way of gratitude.

Drawn especially for Orchard and Farm by "Hal."

But he is too smart a youngster to enthuse over such a questionable gift, while juicy plums are being dealt out to others of Uncle Sam's nephews, and all he gets is a "football" that he never wanted very much anyway.

Here's Good Food for Thought

To Orchard and Farm:

"I read Dean Van Norman's article in Orchard and Farm last month with great interest. It would follow, from his remarks, that the farmer who with his family does all the work in connection with his business (as so many do), in addition to supplying capital and management, is entitled to the reward due all three factors: 'Capital, Brains and Labor.' Yet how many farmers are so rewarded, or even get the 'good living and 10 per cent' which is their due?

"Or how many, who borrow capital and pay the regular rate of interest as 'Capital's reward,' get the slightly smaller share that is then due them as 'Labor and Management' and part-owner of 'Capital,' as represented by the land?

"Dean Hunt, in a recent address, showed that the average gross farm income in California has greatly increased during the past three years. Yet so greatly have legitimate expenses increased that there will be little more than usual left for the income tax taker. And still there are some who rave and tear their hair and assert loudly that food producers have no right to organize and to bargain collectively!—George W. Spencer, Los Angeles County."

Big Opportunities

DURING the past year, and especially within recent months, the State Department of Agriculture, as well as every chamber of commerce in California, has been flooded with letters of inquiry from Easterners desiring to take up farming and fruit growing in this State.

The highways have carried this year a steady stream of tourists, from every Eastern State who, as they travel through our marvelously rich agricultural districts, have in mind the selection of a future home. Many of those who came overland have elected to remain.

What is the significance of this movement, which has been more manifest than ever before in the history of California? To those of us so fortunate as to be either native or adopted sons of the Golden State, yet so unfortunate as to be landless, it means this: Now is the time to become the owner of good farming or fruit land. It will never again be as cheap; it will never be as readily available; prospects for the profitable sale of agricultural products will never be brighter.

Fortunate indeed is the man who has the means or the will to become a California land-owner at this time, providing, of course, his judgment in selection of soil and location is good. If we who belong here do not take advantage of the economic situation growing out of the lure of California, the thousands who annually make "the pilgrimage" will do so.

Good agricultural land is the soundest and surest investment ever offered. And today it is paying a higher rate of interest than ever before. Good land in California will probably increase in value more rapidly within the next ten years than in any other State. Are you "on?"

ORCHARD AND FARM

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CONCISE CONTRIBUTIONS

On practical agricultural subjects are invited. Unavailable manuscript will be promptly returned if postage is enclosed. Preference is given to accounts of actual experience, telling why, when, where, who and how much.

For Better Corn

PROBABLY the only reason California does not leap into the front rank among corn-growing States is the fact that her irrigated land is too expensive and productive to devote to wholesale corn production, while other classes of soils are better suited to the growing of the small grains.

Certain it is that in quality and yield per acre of Indian corn this State need not take second place to any, as has been proved time and again by growers from North to South.

And corn growing, not only for ensilage, but for grain as well, is important enough to call for more attention to advanced cultural methods. In the selection and care of his seed, particularly, the average Golden State farmer might well investigate and apply some of the methods used by his corn-belt brother.

It is not unusual to hear a farmer complaining about the high cost of good seed corn. Yet at $5 a bushel, even for ordinary stock, the seed used on an acre costs only about 60 cents. And it may mean the difference between success or failure! Cheap seed of any kind is expensive in the long run. The average farmer will pay from $2 to $4 an acre for his seed wheat and up to $10 an acre for alfalfa, but for some reason objects to paying a high price per bushel for seed corn, which in terms of cost per acre would be, comparatively, very cheap.

Selection in the field from thrifty stalks (showing large numbers of well-formed ears), careful drying, and germination tests before planting are just as important in California as elsewhere. The results obtainable through selection are shown by the accomplishments of men like Frazee of Santa Rosa, whose "Wonder" corn frequently produces from 6 to 12 ears to the stalk and sometimes much more. While the average grower may not develop such a strain, he can, by careful selection of his own seed, if he has started with good stock, finally produce a "utility" variety better suited to his soil and producing better and more uniform results than seed grown and selected by someone else and purchased every year. Here's to better California corn!

The H. C. of L.

The greatest minds of this nation agree that the only cure for the high cost of living lies in greater production, particularly of foodstuffs. The only way production of food may be increased to any appreciable extent is through making the business of food-production attractive. The only way to maintain this condition is to assure the farmer of reasonable profits and a good return on his investment.

Treatment of social ills as well as bodily ills has passed the stage of suppression and is now being accomplished by means of prevention, and the promotion of natural processes. Any attempt to secure a reduction in the price of food by throwing the officers of farmers' organizations in jail and bitterly contesting their right to organize and thus obtain fair returns for their labor and investment, represents suppression and will aggravate, rather than remedy, the trouble.

The farmers realize that the labor unions have shown them how to obtain their rights. They also realize, however, that the unions are now showing them, by example, what NOT to do. The American farmer is level-headed. Because he knows it is "bad business," if not for humanitarian reasons, he will not abuse his newly-acquired power. But neither will he relinquish it!

"I Began Right"

GOING to the root of the matter—the seed bed from which the roots take their food—you get at the principal source of crop success or failure. That's why a wide awake farmer, when asked the secret of his bumper crop, pointed to his International disk harrow and said, "I began right. I built up, not down."

No matter how rich your soil, you cannot expect big yields unless you give your seed bed a square deal. Get a good disk harrow—one built by men who know every angle of the business through long experience and study. You have too much at stake to buy an experiment.

The present International line of disk harrows is the most complete we have ever offered. You know your soil. Whatever its needs, we have the type of disk harrow suited to them. If a sandy, loose loam, the two-lever type answers every requirement. If hard, stony, or trashy ground, the three-lever type, with its center depth regulator, insures a firm, compact seed bed. If you use a tractor, see our leverless tractor disk. Whatever your power equipment, we have a size that utilizes it to best advantage. Ask your local dealer to point out to you the exclusive features of each type.

Every implement in this line is built to serve fully some particular farm purpose, to save your labor and time, and make you money. The line includes open end, closed end, and flexible peg-tooth harrows, spring-tooth harrows with single and double end teeth, and one-horse cultivators with every kind of tooth and shovel equipment.

Check over the list of machines in this advertisement and write us for full particulars about any that may interest you. We will, on request, supply you with a catalog, showing full details of construction and operation.

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That's what one dairy farmer recently told us. And time is not the only factor in cleaning a barn. Shoveling manure every day requires man-power and means labor. A Louden Carrier will save the labor of at least one man. Makes barn cleaning easier, cuts labor, cuts cost.

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An Adventure in Aviation

(Continued on Page 10)

ing subject of his experiences "over there," a topic which gave fullest rein to his virile imagination and which, he had learned by experience, always brought the most rapt attention from his feminine companions.

"I had just crept into our dugout," he concluded, while his fair passenger hung breathlessly upon his words, "when they opened up with the worst barrage we had ever known on that front. Talk about hell on earth." (He reveled in the ease with which he manipulated this descriptive term; she, in the terribly experienced worldliness of it.)

As they rolled up the driveway beside the house, he stopped the car to conclude his harrowing account. The girl's eyes were big and shining.

"I saw six of the boys keel over like ninepins. Just back of me a mortar was belching bombs and smoke. I started to crawl further into the dugout, when suddenly, not ten feet in front of me a shell crashed through the roof—"

The speaker suddenly dodged to one side and Josephine delivered a piercing scream. Surely no account of adventure was ever more graphically illustrated. Not ten inches before their heads, a heavy object crashed through the thin top of the machine, fell with a terrible thump into a large basket of eggs which they had brought from town and set on the floor between them, and sprayed both occupants with a liquid far more slippery and disconcerting than any Flanders mud.

BLINDED by a scrambled combination of yolk and white, the dazed young driver quickly yanked his gear-lever, unconsciously throwing it in reverse. At the same time his left foot slipped off the egg-spattered clutch-pedal and the car took a violent backward lurch, the rear fender crashing into the side of the house and crumpling up like paper. Perhaps it was providential that his involuntary actions took this form, for the first crash was followed by the descent of a half dozen bullet-like objects on the hood of the car, some of which undoubtedly would have struck them had he not backed away so quickly. As it was the enamel was cracked and several distinct dents extending from the cowl to radiator made in the polished bonnet.

The first smash and her daughter's scream had snatched Ma Steeley rudely from the lap of slumber, while the subsequent crash of the car against the house, followed by a noise like machine-gun fire as the various missiles struck the metal hood in rapid succession, had brought her quickly to her feet and sent her running, still half dazed, to the door. Just as she stepped hurriedly outside she was enveloped in a strange black mass which swooped upon her from above like a giant hawk and, becoming entangled in her hair and shawl, almost dragged her to the ground before she could recover her senses.

Momentary inspection revealed it as her best silk umbrella strangely trussed with twine and wire and displaying a gaping rent from tip to tip in one section of its shiny black covering. Securely tied to the handle was her favorite market-basket. It was this, she opined dazedly, which has delivered the first reeling blow upon her head.

But her primary deductions were hasty and hazy, for no sooner had she extricated herself than she was hurrying towards the battered machine, which Josephine had left with a sudden leap, and from which was just climbing a strange object which had not long since been a dapper young ex-soldier, very correct as to waist-seam and silk shirt.

A sticky, yellow substance streamed from his every outer garment. Gingerly he backed out of the car, his first jump having torn the storm curtains from their fasteners. With one hand he was wiping from his eyes a mucilaginous mass, while in the other he held a smooth, round object, about four inches in diameter, not yet distinguishable.

Hastily observing that her daughter was not injured, Ma Steeley held her hand over her beating heart and surveyed the wreck of Josephine's swain. "Why, Clarence, what have you done? What's the matter? What is that you have in your hand? Are you hurt? Where on earth did you get—Oh, thank heaven you are both safe!"

But Clarence (for this, indeed, was our hero's name) did not reply. Still he gazed with deadly fascination upon the round object he held in his hand. His eyes gradually cleared. He blinked and wiped the round object upon his coat. Then he examined it again. "Croquet ball," he stated in a voice strangely like the croak of a frog. Then he looked at it again. "Croquet ball," he repeated in a strange falsetto. Still disregarding the puzzled, and somewhat frightened scrutiny of "her mother," he dropped to his knees and picked up several more round objects of similar size, where they had rolled from the hood of his prized and now sadly mutilated roadster. "More croquet balls," he asserted with deadly earnestness, in a still higher falsetto.

By this time Josephine had summoned sufficient presence-of-mind to subdue her hysterical fright and throw herself into her mother's arms. The eyes of all three turned to the wreck of the silk parasol. Then, as one, the woman and the girl and the young man looked aloft.

THERE, silent as any mice, two very white and very frightened little boys were gazing timorously down upon them. Their mother suppressed a scream. "Larry—Davey," she cried! "Go inside that window instantly."

In a surprisingly short space of time the culprits appeared, side by side, still very pale and quiet, and walked slowly through the door into their mother's presence.

"What on earth have you done now?" demanded their mother. "What do you mean by throwing things down upon Clarence's car and almost killing him and your sister. What——."

"Honest, Ma, we didn't know they were there," quakingly began Larry. "Honest we didn't, Ma. We was just trying out our paraskoot——."

"Trying out WHAT?" demanded Josephine, eyeing them suspiciously.

"Our paraskoot," explained Davey, pointing to the bedraggled umbrella. "You see, I thought maybe we could float down with it like the lady I saw when Uncle Walt took me to the Fair, so we tied down the umberelle so's it wouldn't turn inside out, an'——."

"Yes," interrupted Larry. "We didn't 'tend to hurt anybody, Ma. We couldn't decide which one of us was to go first, so we thought we'd try it with some croquet balls we found in the attic, and just then Clarence drove up. Honest, Ma, we didn't mean to, honest!"

The twins, no less than the angry Clarence, were unprepared for what followed. Swooping down on them, Ma and Josephine each swept one of the lads from his feet and hugged him tightly to her breast. Big sister sobbed convulsively, and for the first time in many months, tears streamed from Mrs. Steeley's eyes.

"My darling boys," she cried. "Oh, I am so thankful you didn't try to ride in the basket yourselves. Oh, and to think that Mother went to sleep and didn't know what you were doing!" She picked her tow-haired offspring up in her arms and moved towards the door, while Josephine, holding the dark, curly head closely against her, followed.

The soldier-suitor continued to stare. Utter incredulity marked his egg-strewn features. Complete dejection showed in the sag of his soldierly shoulders. Suddenly his brow darkened. "Aren't you going to whip—" he began, but seeing that his words fell upon entirely deaf ears, he turned away in utter disgust. And the words that he said beneath his breath must have been learned in the trenches under very trying circumstances. With scarcely a glance at the battered fender and dented hood, he sprang to his seat behind the wheel. And just as his impatient foot found the starter, a sweet childish voice, full of relief and enthusiasm reached his ears from within:

"It was a great idea, Ma, and it would of worked fine if only that old umbereller hadn't ripped!"

Just Weeds

By Jason Wells

[A recent scientific report points out that although the "so-called poppy of Flanders" has furnished material for song and poetry, it is in reality a dangerous weed, which resists eradication after once gaining a foothold, and is a serious pest in the agricultural regions of France and Belgium.]

The poppies of the Flanders fields—
Immortalized, they guard our dead.
What sacrilege is this that wields
A bludgeon o'er each nodding head?
Just weeds? These poppies? Then the cross
That marks the grave is but a stick,
And memory with its crushing loss,
Of Fancy's mimicry, a trick!

Ah, yes, the rose may be a weed,
And lilies choke the waterway,
Yet courage bring to hearts that bleed
And light to those who watch and pray.
Then let them clothe that sacred sod;
What holiness their presence yields!
They bring us nearer to our God,
These poppies—in the Flanders fields.

How the Experience of Years Saves Money in This Post-War Maxwell

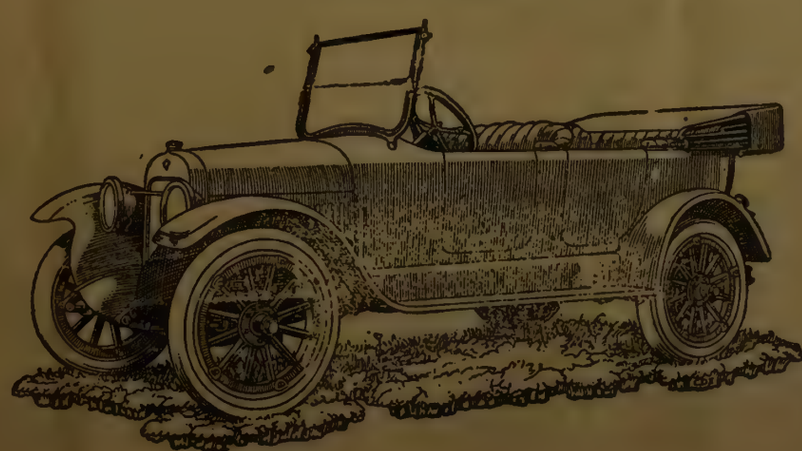
THE run of 300,000 Maxwells to date saves you many a worth while dollar in the new Post-War Maxwell. Those 300,000 saved in many ways.

More miles per gallon
More miles on tires

1. They taught "short cuts" in manufacturing.
2. They eliminated all experimental work—you don't have to pay for a single engineering mistake.
3. They developed quantity production which has reduced "overhead."
4. They enabled quantity purchases; and better materials are bought at lower costs.
5. They taught how to build an almost trouble-proof car; you seldom take a Post-War Maxwell to a repair shop.
6. They taught how to get the most mileage out of a gallon of gasoline, a pint of oil and a set of tires.
7. They taught how to build a car that the less skilled driver would find simple to operate and take care of.
8. They taught that it was better to build more and take less profit per car rather than build less and take more profit per car.
9. They taught how to put more and more value in the car without increasing its cost.

This Post-War Maxwell is next year's car. It contains features developed during the war, many of which will find their way into other cars in the summer of 1920. Price $985 f. o. b. Detroit.

MAXWELL MOTOR COMPANY, Inc.,
Detroit, Michigan.



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Every orchardist and rancher knows the value of a good cover crop. It loosens up the soil by adding humus. It prevents the winter rains from washing. And—if it's one of the leguminous plants such as

Woolly Podded Vetch

adds free nitrogen to the soil equivalent, on the average, to 1000 pounds of nitrate of soda to the acre.

Woolly Podded Vetch is a purple-flowered winter vetch. It grows luxuriantly and covers the ground thoroughly affording ample body for green manure. It should be planted after the first fall rains—60 to 70 pounds to the acre.

Morse's seeds are soil tested—they grow. They are true to strain, pure-bred, germinating seeds, free from all foreign matter.

Early planting yields the heaviest crops. Write today for quotations on Vetches, Mililotus, Clovers, Field Peas, etc. Write now!

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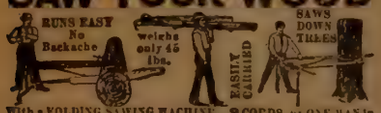

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How High Can We Boost Bossy?

Although notably slow, among leading dairy States, in organizing and boosting the dairy industry in all its branches, California, once started, certainly "hit the line hard." In fact, it has been timorously suggested in some quarters that there are now "too many boosters." This, however, seems to be beside the issue, as long as there are no knockers. At any rate, Bossy has taken a wild leap into the limelight, where she is achieving everything from mild publicity to questionable notoriety and is enacting all roles from peaceful provider to vicious villain—according to the viewpoint of the audience.

WHEN two great associations, apparently on none too friendly terms and even accused of open hostility, are both engaged in boosting the same industry and therefore helping each other, a strange situation is presented.

This seems to be exactly what is taking place in the dairy industry of California. In Sacramento, under the forceful and intelligent guidance of J. M. Henderson, banker, dairyman and man of affairs, has grown up the powerful milk producers' association, the "Associated Dairymen," made up of a number of local associations and rapidly extending its influence into all counties of the State where dairying

J. M. Henderson

is carried on. Its members are binding themselves by means of an "airtight" contract for three years and are paying into the treasury the sum of $5 per cow for the privilege of becoming members and sharing in the mutual benefits. It has secured the affiliation of such powerful existing organizations as the California Milk Producers' Association, controlling 80 per cent of the milk delivered to Los Angeles, of which T. H. Brice is secretary and manager, and many others, north and south.

In San Francisco, on the other hand, is located the headquarters of the California Dairy Council, an organization led by Sam H. Greene, and professedly touching a much broader field than that occupied by the Dairymen's Association. In explanation of the plans and purposes of his organization, Mr. Greene recently said:

Dairy Council Program

"We are boosting the milk industry as a whole, as represented by producers, distributors and manufacturers; even extending our influence to the assistance as well as the education of the public. The bankers and all factors affected by the industry contribute to our organization. Yet we are less concerned with prices than with better methods of production and increased consumption. We shall make it our business to popularize as much as possible, through advertising and other means, the consumption of milk and its products. On the other hand, we shall encourage more efficient methods of production to the end that prices may not be raised to the point where consumption is restricted or expenses increased to the point where profits reach the vanishing point. We——"

"But, hold on," cries a member of the other association. "You need not concern yourselves with improving methods of production; that is a matter to be worked out by the dairymen. And, anyway, your organization really represents the manufacturers and distributors, many of whom, we believe, have taken unfair advantage of us in the past, and some of whom are now fighting us. The farmers, the owners of cows, are only slightly represented in your directorate."

An Argument Ensues

"True," replies Greene, "but although our organization was largely started on its career through the contributions of distributors, we are enlisting the dairymen as rapidly as our organizers can reach them, and soon they will be represented as strongly as any other factor. We are only asking them to subscribe the sum of 20 cents per cow per year for three years, and the benefits that we can offer them through our much larger field for support, are far greater than are offered by an organization of producers alone. Our field men recently acquired the support and endorsement of many of your own members and

Sam H. Greene

some of your subsidiary organizations."

"Interesting—if true," retorts the dairyman representing the "Hendersonites," "but never mind that part of it at all. Why burden our dairymen with a double assessment? Let us alone. Let us have our own organization, and we will put up dollar for dollar with yours for the general advancement of our mutual interests through publicity and advertising. We will appoint joint committees and have a forum for consideration of mutual problems. But do not ask the dairymen to contribute to the support of an organization conceived and controlled by our natural enemies."

Two Sides to the Question

"Hold on," breaks in a Dairy Council organizer. "The distributors are not your natural enemies. That is the impression which has done much to hold back development of the dairy industry in the past. And the Dairy Council actually IS the very forum that you have mentioned. It already is in existence."

And so the argument waxes fast

and furious, but still both organizations are doing an increasingly great work in furthering the one big cause which, after all, they both represent. As to future developments—who knows? But, as one successful cow-owner remarked: "What's the difference so long as both are boosting and neither knocking the business of dairying? What if their advertising campaigns do overlap and duplicate each other for a time. It all helps."

One meets with the greatest admiration of the independent and self-sufficient spirit shown by the dairymen and the thorough manner in which they are going about their work and extending their organization into all parts of the State—even affiliating with similar associations, in other States. And, among farming people at least, one finds almost no criticism of the activities of the indefatigable worker and organizer, Henderson. It is quite generally agreed that he is devoting himself heart and soul, and without direct recompense, to the cause in which he has become so deeply interested. It is, furthermore, agreed that almost unlimited power lies within the reach of the dairymen who finally become "100 per cent co-operative." That they will not abuse that power, but use it merely to secure for their members a fair deal and reasonable profits, seems assured by the records of other co-operative marketing associations in this State and by the evidence of intelligent management and foresight displayed by the organizers. These men, as well as others engaged in seeking the elusive "legitimate profit of the producer," know that abuse of the power acquired through organization could eventually be nothing less than a "boomerang," resulting in decreased consumption and the arousing of the enmity of consumers.

Educating the Public

And, indeed, it is a mistaken attitude on the part of the public that the other organization, the Dairy Council, is attempting to correct, its representatives declare. In fact, the avowed purpose of the organization, as set forth in its preliminary reports, is "to disseminate accurate information about dairying and dairy products."

The disinterested observer cannot but be impressed by the program of this organization; indeed, if it can be judged by its works, a great future lies ahead of it, and the fact that since January of this year it has gained a very large membership, including more than 900 dairymen, seems to indicate that there has existed a real need for just such an association.

It is patterned after the Dairy Councils existing in six other States and is affiliated with the National Dairy Council; yet distinctive in many ways and quite independent of action.

Its manager, Sam H. Greene, who was for twenty years connected with various commercial branches of the industry, receives a salary of $6000 per year, and for several months two field men have been employed on a salary and expense basis, to secure members and conduct the work of the council in various counties. Already some $3000 has been expended in advertising, largely in connection with the school milk survey, which will be touched upon later in this article.

A rather unique plan of organizing the producers' branches of the council was early adopted. In all counties where there are farm bureaus, a dairy branch or department has been organized, which, although having its own officers and pursuing its own local policy, is responsible to the council. A committee, under the leadership of the Farm Adviser, solicits members among the Farm Bureau members, and thus the burden of direct solicitation among the dairymen is removed from the main office. The latter then concerns itself mainly with education of the public, leaving education of the dairymen to the Farm Bureau and the local organization in each district.

Already in its brief span of existence the council has accomplished a great deal. It has concerned itself with legislation in no small measure and takes partial credit for the defeat of certain measures at the last session and favorable action on others, including oleomargarine regulations. A survey of schools is now in progress, whereby it is to be determined how much milk is consumed by each pupil of the different classes. This survey also has involved, however, education of children and parents in the value of milk. Emphasis has been laid on the discoveries of Dr. McCollom and the absolute necessity for inclusion of milk and its vitamines in the diet of the growing child. (This investigation has shown that milk contains a certain class of constituents, called "vitamines," without which the human race would perish.)

Representatives of the organization accompanied the special California delegation to the National Dairy Show and Council in Chicago and took part in conferences of national importance.

Working with such agencies as the Farm Bureaus, the Board of Education and the State Board of Health, the Dairy Council has quickly attained results as well as Statewide attention. Future accomplishments, depending upon the securing of members and funds, the energies of the organizers will be largely devoted for the next few months to this end. The program for the future calls for much important activity. It is planned to spend up to $20,000 a year for advertising in city newspapers and to install exhibits, both temporary and permanent, in various locations and in connection with fairs and shows. Competent women demonstrators will be employed to discuss problems of nutrition and to educate mothers as to the necessity for milk in the diet.

Steps will be taken to increase the demand for all dairy products, including various kinds of cheese, buttermilk, butter and by-products. The interest and co-operation of parent-teacher associations will be enlisted.

The publicity campaign will include the use of newspaper articles, lantern slides, moving pictures, posters, stickers, booklets and many varied means of disseminating information.

With a vision of the possibilities of such an organization, if actually conducted on a strictly unbiased basis, it seems inconceivable that its program should fail. And leading dairymen agree that if it confines its activities solely to the broader questions confronting all branches of the industry, never varying from this program and showing no favoritism, it will receive the necessary support and indorsement from the producers.

Time Will Tell

There is considerable suspicion to be overcome. It must prove its faith to the dairymen by its works, and it is as yet little more than an "infant." But so far its record seems to be clean and clear, and only the future can show its true scope and value. Certain it is, however, that unless the dairymen are finally satisfied as to its lack of ulterior motives, it cannot exist as a real "forum" but will have to come out boldly as an organization of distributers and manufacturers. And whatever the developments, it seems also equally certain that the dairymen will continue their own organization and fight their own fights and demand of the distributers and public a fair return as an inducement for "delivering the goods."

Meanwhile, let the harmless arguments go merrily on. At last the dairy industry in California is waking up. And now, with the Dean of our Farm School installed as head of the National Council, and everybody boosting and educating and improving, who can longer deride California as a dairy State? We have arrived! We are on the milk wagon to stay—and will follow the milky way to increased health, prosperity and happiness.

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"Filaree," the Stockman's Friend

By P. A. Ingvason

"FILAREE," as it is familiarly dubbed by stockmen all over the Pacific West, is conceded to be in many ways the king of our wild forage plants. It is an immigrant from Europe and is supposed originally to have been brought to this country, along with Burr Clover, in the fleece of the Castillian Merino.

It quickly adapted itself to the territory extending from Central Texas north along the coast to Washington, and supplanting native growth which had been killed out by over-grazing, actually rehabilitated many an area of depleted range.

Alfilaria has saved the day and the herds during many a period of adverse weather, and because of its remarkable resistance and ability to spring up almost overnight after early rains, it is the great dependent of many husbandmen in those sections where it is abundant.

Its most valuable attribute, over and above its feeding value and palatability, has been its hardiness, combined with its ability to thrive without any care or attention. There is a growing belief, however, that it should be taken into the system of field husbandry, and employed in the reclamation of such lands as are now barren wastes.

Moreover, it has been grown very successfully for hay, yielding as much as two tons to the acre on certain bottom lands, and as high as one and one-half tons in the meadows situated in the grazing districts.

Among fifty kindred species of alfilaria, Erodium cicutarium ranks first as a forage plant. It is easily recognized by its rosette form, attaining a diameter of about twelve inches and reaching a height of twenty inches. It has a dark green color and dissected, hairy leaves. The flowers are of a purple hue, arranged in clusters. The matured seed has an elongated form and terminates in a small hook, which causes the seed to attach itself to the furry coat of animals.

Species of "Filaree"

Besides this species there are found in America about half a dozen other kinds, none of which are known to be as palatable a feed as is E. cicutarium. One of these species (E. Moschatum) is, however, an important green manure crop in Central California, where it makes a luxuriant volunteer growth in the orchards during the winter season and at times in certain localities is cut and cured for hay.

After the first heavy fall rains in the Southwest have saturated the sunburned hills and the water has soaked the loose clayey and gravelly soil, the "filaree" begins to "show up," and if the weather continues moderately warm, the rosette carpet of green verdure is soon in evidence.

The plant accommodates itself most admirably to varying conditions. The prostrate form of the early growth mitigates against too close grazing, while it obtains the maximum amount of heat and light by being thoroughly exposed to the sun.

Habits of Growth

As winter sets in, the tap-root continues to develop while the growth of foliage becomes almost dormant. At the first warm period in spring, the flowers begin to appear and a mass of erect stems shoots up, making a profuse growth. In spite of protracted dry weather, the plant maintains itself and within six weeks from the time when the flower is formed, the seed has ripened on the stalk. An annual percipitation of from 4 to 6 inches in the Southwest, if well distributed, is ample to carry alfilaria into maturity.

For a long period following maturity, the dried and discolored alfilaria together with the mat of seeds which it has shed upon the ground, forms an excellent pasturage. In the mountainous regions where summer rains are common, the vegetative growth continues throughout the summer season.

As an evidence of the nutritive value of "filaree," it may be stated that analysis of about twenty samples showed an average protein content of over 14 per cent. Thus it becomes apparent that the plant compares favorably with, in fact, sometimes excels, alfalfa in this particular.

Again, the fiber content is low—another point decidedly in its favor. Furthermore, the mineral components of the plant are relatively great and the carbohydrates fully as plentiful and valuable as similar constituents of alfalfa. In brief, it may be said that for all practical purposes, stockmen who have fed "filaree" consider it equal to alfalfa hay, while for pasturage alfilaria is claimed to be superior to alfalfa in many respects.

"Filaree" is never known to cause bloating of ruminants nor to give rise to any other alimentary troubles in livestock.

Farming the Range

The main problem confronting the hundreds of interested stockmen who want to establish alfilaria on their ranches is to devise practical methods for gathering the seed and sowing it on favorable sites. In a season such as the present year, the growth of alfilaria was luxuriant in most regions and the seed crop extraordinary. A few suggestions derived from actual experience in the field might aid the husbandman who is desirous of conserving and encouraging the growth of alfilaria.

The first thing to do is to locate a good even stand of "filaree" and then to eliminate stock from the field. Keep the field under a fence during the period when seed is ripening.

Collection of alfilaria seed has never been undertaken, except on a very small scale. Hence, methods must be evolved for commercial gathering of the seed. Apparently the most feasible method consists of raking together by means of a kind of comb, the matted seeds after they have ripened and dropped to the ground. Next, the seed is put into sacks and sown as soon as possible; then harrowed into the soil with a field-drag or an "Argonaut harrow," which is made in small sections and is well fitted for surface cultivation of range lands.

What Fertilizers?

An important field for practical research is in the determination of

which kind of mineral fertilizers might prove valuable and would be profitable to use as a light dressing for "filaree." The remarkable success which has attended the application of sulphur and superphosphates to upland soils under semi-arid conditions in Oregon and California, as well as in Australia, is indicative of great possibilities in reclaiming depleted grain fields and over-grazed range of the park and plateau type.

Finally, let us sum up a few hints on the pasturing of "filaree" and its use in a meadow. Experience has thoroughly demonstrated the value of a combination of burr-clover with alfilaria on the range. Fortunately, stockmen are coming to realize the absurdity of the habitual practice of over-grazing the range.

In the case of annuals like the two species under discussion, seed production and distribution of the seed apparently are the only means of maintaining the forage on the range, while in the case of the root-stock perennials, a stand can be maintained indefinitely, merely through occasional surface cultivation and the application of a casual dressing of manure. On the contrary, alfilaria must be given a chance to seed once in a while, but after the seeds have been dispersed close grazing is quite harmless. The principle that appears to be of paramount importance in range conservation is to avoid depleting the humus content of the soil and even to increase it gradually through accumulation of vegetable matter, which in turn stimulates the yield of forage and prevents evasion.

As a matter of fact, fencing of range land into paddocks, as is being practiced by many stockmen, greatly facilitates revegitation and soon results in an enormously increased supply of forage. The fencing of pastoral lands is certainly a theme for attention in the immediate future, and is bound to receive a great impetus due to high prices of livestock.

The principle factors in making hay from "filaree" are to avoid dropping of leaves and exposure to moisture.

In laying out a meadow of alfilaria, alluvial bottoms or gentle hill slopes having rather heavy soil should be selected. Subsequent to the plowing and cultivation of the soil (which should be done during the early fall), the seed should be broadcasted, eight pounds to the acre being sufficient. The broadcast seeding is followed by light harrowing. This is especially necessary if the seed has been kept exposed to the weather through the period that elapsed from its collection during the spring until sowing time. Germination and growth will begin after the first rain that occurs.

Livestock should be kept off the field during the ensuing period. By the time the "filaree" is in bloom, it should be cut and raked into a swath. As soon as it commences to wilt to any appreciable extent, put the hay into cocks and cure it in that manner. When the cocks are moderately dry, handle the crop the same as ordinary hay. A sweep-rake is satisfactory for stacking. It is well to mix a little rock salt with the hay as it is put into the stack or in the mow. Thus treated, it sweats more quickly, and makes more palatable feed.

As a meadow plant, the "musk alfilaria" would be superior to the common range species. The yield of the former species is much greater, while the quality of the hay is about equal. The musk flavor of this type (E. Moschatum) is not so pronounced when the hay is cured in the manner described above and stock seems to become accustomed to it quickly. In California, hay of "musk filaree" is fed to dairy cattle. Mountain ranchers are unanimous in their praise of alfilaria hay and their animals certainly exhibit a prime condition even when fed "filaree" hay to the exclusion of all other roughage.

One Way to Start With Purebreds

"HOW shall I make a start with purebred livestock?" is the query of many a perplexed, but ambitious farmer, who surveys with perturbation the prices asked for high-class breeding animals.

One answer to the question, at least insofar as dairying is concerned, is this: "Start with young stock." Young calves from good dairy cows have formed the foundation for many a successful dairy herd.

Ordinarily the method advocated is to grade up common cows with a purebred bull, requiring a number of years of patient selection and breeding—a period sometimes discouraging to an energetic dairyman. Frequently this causes farmers, who want results too quickly, to change breeds.

Disadvantages With Cows

It is expensive to buy mature dairy cows that are free from disease, that have good breeding and show desirable productive ability. Often, especially in new dairy sections, a farmer buys mature stock without being properly prepared to care for it, and many discouragements follow. To a great extent most of this difficulty can be avoided by buying good grade heifer calves from herds of well-established milk production. In some dairy regions it is a common practice to sell the heifer calves for veal. These calves, while only grades, are usually from good producing ancestors, and carry a productive ability much greater than common cows.

The buying of such calves to start dairy herds has been tried in several States with excellent results. Of course, the cost of small calves is much less than mature animals, and the danger of disease is also greatly lessened. In general, shipping is simpler. Calves may be shipped by express at from two to four weeks of age, depending upon the distance, with good results if they are properly cared for upon arrival.

How to Buy

In buying it is important to deal only with dairymen. Do not buy from men who purchase calves at stock yards to ship back to the farmers, because it is not always possible to determine the breeding of the calves, and calves that are physically unfit may be shipped.

In some cases shipments are made C. O. D., which enables the buyer to see the calves before paying for them. A man who sells calves in this way makes a special effort to please his customers. It seems desirable, especially in sparsely settled sections, that more attention be given to perfecting a satisfactory system of distributing dairy calves to farmers.

Advantages in buying small calves as a foundation for a dairy herd are summarized as follows: Small investment; better breeding; greater freedom from disease; in case of accident loss is smaller; raising calves stimulates interest and in consequence causs better care of livestock; a satisfactory herd can be established more rapidly than by grading up common cows.

The Cleanly Hog

If you don't believe that the hog is naturally a clean animal, build long, narrow pens, say, 8 feet wide by 25 feet long. Always feed at one end and you will find that this end will remain clean. I have adopted this plan in the arrangement of my pens. I feed from the driveway and find this arrangement not only sanitary, but convenient. The cleaning of the pens, also, may be done at the far end, saving labor.—A. Ross, Ripon, Cal.

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Helpful Hints for Housewives

So here's to the fire with its crackling logs—
The trains and dolls and woolly dogs—
The big, green tree with its tinsel, gay—
The children's happy holiday!

Dear Friends:

Are you so "grown up" that there is no thrill for you in the thought of Christmas—no delicious, secret hiding place in which to store away pretty, frilly, beribboned gifties to gladden the hearts of your friends—no happy hours of preparation with a busy needle—no plans for bulging stockings? Ah, then, yours must be a childless house, for only those who are not blessed with the music of baby chatter in their homes could possibly become so terribly sophisticated as that! I like to think of Christmas as the day of "beginning again," just before the New Year when good resolutions are solemnly pledged. I like to think of it as the backward step towards childhood that will offset the annual birthday which I am beginning to dread. It is a day that will erase a whole year of age, if it is properly observed, because there is nothing so rejuvenating as the spirit of giving. To make others happy is the real Christmas spirit, and to do this is to gladden your own heart. And as we all know, a glad heart erases wrinkles and brightens the eyes, smooths the brow and lightens care. So let us all celebrate this happy day of "beginning again" and once more share with the kiddies the thrills of the visit of Saint Nick. Merry Christmas!—Isabel Sinclair.

Sugarless Pumpkin Pie

Here's a pumpkin pie that needs no sugar. Pumpkins and squash are in season. This pumpkin pie is up to date at this time of sugar scarcity.

2 cups pie squash or pumpkin (stewed and strained).
½ cup molasses.
1 teaspoon cinnamon.
1 teaspoon ginger.
½ teaspoon salt.
2 eggs.
2 cups rich milk.

Mix the pumpkin, molasses, cinnamon, ginger, and salt. Beat the eggs slightly and add them and the milk to the mixture. Bake the mixture in one crust until it is firm.

To Keep Cellar Dry

Fortunate indeed is the housewife who has a cool, dry storage cellar in which to keep her fruits and vegetables. Here are a few helpful pointers on cellar storage.

The first requisite of a storage place for fruit is absolute cleanliness. This cannot be assured by soap and water alone. Sunshine, fresh air, and whitewash are important aids. The shelves should be washed clean and then dried, but undue use of water should be avoided as moisture is one of the chief requisites of mold growth.

A cellar may be kept dry by placing in it dishes of unslaked lime, which rapidly takes up the moisture. When the lime crumbles apart, losing entirely its crystalline character, it has become "slaked" and will take up no more water unless it is renewed.

Growth of most molds is retarded by light, ventilation, and low temperature. A fruit cellar which will successfully keep fruit must possess all three conditions.

Clean Paper for Kitchen

Paper has many uses in the kitchen. The cook needs a piece of paper on which to drain the dried croquettes, the fritters or the doughnuts, and she reaches out for the brown paper in which the meat was wrapped. She turns to the same source when she wishes paper for lining a cake pan.

A little reflection will show how far from cleanly is this practice. In every kitchen a roll of grocer's paper on its frame will prove useful. The housewife is then sure of having paper that has not been handled since it was rolled up by machinery in the factory. Paraffin paper should be on hand for covering food, for wrapping up sandwiches for school lunches, and for similar purposes.

Newspapers cut into pieces of convenient size, or old catalogs, if used to place under kettles or pans, will save much scrubbing of the sink or table. Light, brown paper or tissue paper should be saved for use in cleaning greasy pans and kettles.

The First Aid Chest

A first aid chest, containing bandages, absorbent cotton and simple remedies should be part of the household equipment of every farm. One can buy boxes all fitted out, containing books of instructions which are of great value, or simply make a chest out of an old spool-box or boards about the farm. Every Boy Scout and most girls taking scientific work in school, receive instructions on first aid or emergency treatment. There are many books and leaflets on the subject. A little study of simple principles may save a life.

One should be sure that there is a good light where the first aid material is kept, and all bottles should be plainly labeled. Any bottle containing poison should have a small string of beads or buttons hung from the neck so that it can be instantly recognized. It is important that bandages and other contents of such a box be well protected from dust. Any qualified druggist can give valuable suggestions on the selection of a few remedies and supplies for first aid. On farms isolated and difficult of access by a physician there is especial need of this protection.

Aunt Martha Says:

Did you ever use a nutcracker as a wrench? Try it the next time you have a screw-top can or bottle that won't yield to other methods, but if it's a nice silver one don't "bear down" too hard.

Adhesive plaster is one of the best household menders, especially for all sorts of rubbers. A housewife who keeps it handy says it has as wide a range of uses as the versatile hairpin.

Cockroaches will succumb to sodium fluorid or to pyrethrum powder placed about their hiding places and runways. The pyrethum powder must be fresh and pure.

Mosquito infestations may be due to a pile of old tin cans in which water stands.

Washing soda in boiling water poured down the sink at night will keep the drains clean.

Mother should have a fixed hour each day when she lies down and closes her eyes, whether she sleeps or not. This hour should be undisturbed.

Have you planned the changes in the kitchen that will save steps?

Surface water running into the well or cistern is as dangerous as poison.

If a metal button is attracted to a magnet, one can be sure that such a button will rust in the wash.

Nothing adds more to the comfort of the farm home than a good water system; next to water in convenience is electric light.

A card index has as much usefulness in the home as in the office; one use is for recipes clipped or copied from newspapers or magazines.

THE FAMIL

That up-and-comin' youngster of yours—just watch h
his morning bowl of Germea! For, he knows there's
Germea that's different—something you can't expect to ge
commonplace "morning mush."

And that something is *life-energy!* It's the life-energy
makes it power-food—that makes youngsters and grown-u
to it morning after morning! It's the concentrated food-e
that makes it *economical;* for mother knows that a single
will make a breakfast for a family of six.

Germea is unlike any breakfast food because it conta
the very *life* of the wheat. That's why it builds streng
That's why nothing can take its place as a nourishing break
why Germea is the family favorite—year in and year out!

The first cereal to be put up in package form—Germea is today, as always, the premier breakfast cereal of the Pacific Coast. Ask for Germea in the familiar Red Package—at the store where you do your trading.

SPERRY FLOUR CO.

GENERAL OFFICES, SAN FRANCISCO
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Ten mills and forty-four distributing points on the Pacific Coast

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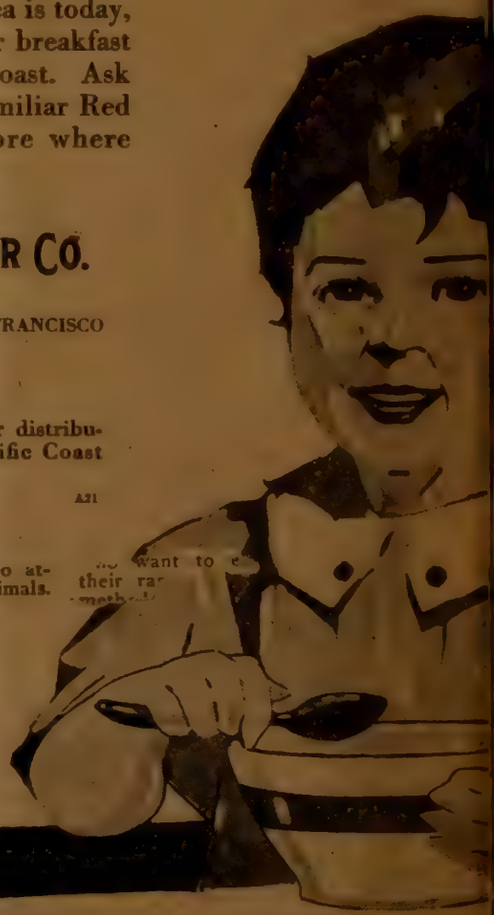

GER

"A Sperry

POWE

Y FAVORITE

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Germea that
alike warm up
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ful of Germea

the "germ"—
and stamina!
cereal. That's

Not only is Germea a cereal of high food value—but it lends itself to other delicious and nutritious dishes—as witness this tested recipe:

SPERRY GERMEA PUDDING

⅓ cup uncooked Sperry Germea; 2 cups milk; ½ cup sugar; 2 tablespoons butter, melted; 1 teaspoon salt; 1 well beaten egg; 2 cups grated pineapple or other cooked fruit; 1 teaspoon cinnamon.

Mix all together, except fruit. Cook half an hour, then add the fruit, place in a double boiler and cook half an hour longer. Serve hot or cold and with any desired sauce or cream.

Note—All measurements are level. A ½ pint measuring cup is used.

M E A
Product"
R FOOD

Edited by Isabel Sinclair

NEARLY everyone likes prune cake, either in loaf or layer form, but to cook the prunes with pits in and then mash them out is irksome. As we have only a few trees, I pitted the fruit one year. I found ready sale for all these pitted prunes, dried, that I could spare. They are superior for making prune cake and many prefer them for eating to the ones dipped in lye. The pits come out very easily and if one has a tray convenient to lay them on, it does not take very long. They dry much quicker than the dipped prunes and one can generally realize 2 or 3 cents more per pound than for the dipped ones.

I also prepare dried figs. Shake the trees every morning and the fruits that are nearly ripe will fall. Only a few days in the sun will finish the drying. About Thanksgiving or Christmas time, scald a "batch" of them in a weak salt solution. Let stand until cool and then spread out on paper to drain about one hour. Save your candy boxes or any nice pasteboard boxes and press the figs in the boxes. You can sprinkle with a little sugar, but they are just about as good without. In about three days they are ready to eat. We have a few almond and English walnut trees and a few almond meats or English walnut meats pressed in with the figs give variety.

I find a ready sale for many boxes at a good price and my customers like them, especially with the nuts.—Mrs. Emma E. Smith, Millville, Cal.

How to Use Loquats

Comparatively few people know what delicious sauce and jelly may be made from loquats, properly prepared. The flavor is much like that of cherries.

Wash the fruit and take out the blossom end with a small, sharp-pointed knife, leaving in the seeds. Just cover with water, and cook over a rather slow fire until the skins are tender when pierced with a fork. Do not cook too long, or the product will have a strong taste.

Set off the stove to cool, pouring off the juice or water for jelly, the preparation of which is explained below. Then cut down the side of each fruit, take out the seeds and blossom ends, keeping the fruit whole. Again nearly cover with water and add a large coffee-cupful of sugar to each quart of fruit. Cook a little longer and then can. Sugar may be added to suit taste. After being prepared in this manner, loquats may be used in combination with other fruits, such as pineapple, raspberry, pieplant, raisins and orange marmalade.

Both raisins and rhubarb should be cooked before mixing with the loquats. The rhubarb should be sweetened without stirring so that it will not become "mushy."

To finish the jelly, boil the juice down one-half, add as much sugar as there is juice and also add the juice of a lemon. Boil a few minutes over a slow fire and then put in glasses.—Mrs. N. M. Jackson.

Sewing Hint

Knotting or kinking of the thread may be avoided by a simple movement in sewing. First, see that the thread is not twisted at the first stitch; then at every stitch give the needle a full turn between thumb and forefinger. If you do this you may use as long a thread as desired—and there will be no kinking.—W. J. Clancy, East San Diego, Cal.

Saving Time and Strength

If you are planning a new home, consider carefully the height of the sink and work tables. If your equipment is already installed, it may be possible to correct certain disadvantages in this direction. For instance, a wooden support for the dishpan may save much bending over the sink, while the table may be cut down or raised if necessary.

No woman can do as much or as good work and feel well and strong, with her sink and table so low that she has to bend over to work, or so high that she has to "reach up."

As a general rule, 32 to 36 inches from the floor is the height for general work tables and the bottom of the sink should usually be 30 to 31 inches from the floor.

However, each woman ought to find out for herself the height of the table at which she can work most easily and efficiently, and see that her work tables and sink are adjusted accordingly. A little attention to these things may actually prevent illness!

Bitter Late Olives

Must late olives always have a bitter taste? No, indeed! Here is a method which will do away with the bitterness.

Put the olives in a waterproof can or crock having a lid. Sprinkle plentifully with salt. Shake them every day or two, or pour them from one bucket to another in order to stir them up. The melting salt should keep the olives all moist. The bitterness will thus be extracted in a few days, as can be judged by taste. They can then be made palatable by steaming or by placing them in salt water which is kept hot but not boiling, for six hours. After this process, they can be dried or baked. Have you ever tried them this way?—Edward M. Transne, Corning, Cal.

A small room usually can't stand more than one heavy piece of furniture. "Loud" figured wall-paper emphasizes the walls. Plain, less conspicuous paper is therefore better for small rooms.

A small wire hair brush will free the carpet sweeper brush of hair, lint, threads and string.

If water and soap won't clean your oil mop try hot water, ammonia and a little washing powder.

Bright colors are appropriate for north rooms, but those with plenty of sunlight should have light tones of gray or green.

In choosing furniture, aim at comfort. A chair that is not easy to sit in has a poor design, no matter what its period or style. Modern furniture makers are beginning to realize this fact.

Oil of lavender is a great freshener. A few drops on the book shelves will overcome the musty smell that may arise in long spells of wet weather.

Cloths used for oiling floors or furniture should be kept in the open. Fires may start from the spontaneous combustion of such cloths if they are kept in a closed receptacle. There is really danger here!

Drives the chills from the morning shave

Portable comfort—instant heat at the touch of a match. No dust or dirt. No smoke or odor. Oil consumed only when needed.

Pearl Oil is refined and re-refined; pure and clean burning. Sold in bulk and in five-gallon cans. Order by name—Pearl Oil.

We recommend Perfection Oil Heaters.

STANDARD OIL COMPANY
CALIFORNIA

Please Send This Coupon

Cut This Ad Out and Mail With $4.85

And Receive This Genuine Hawaiian Ukulele, *Postpaid*

We are Southwestern Agents for these celebrated instruments and we offer our first shipment of 150 for the low price of $4.85, delivered to you. Remember, there are only 150 of them, so send in your order at once.

Platt Music Co.

622 South Broadway, Los Angeles

Smash Ditching Costs

This is the year

Save time and money. Let us ship you a Martin on trial. Makes and cleans all ditches down to 4 feet deep at one-tenth former cost. Works in any soil, wet or dry.

Horse and tractor sizes. All-steel, adjustable, reversible. Will go close to fences or on hillsides or level ground. No breakage, no repairs. Lasts a lifetime. We want a chance to send the Book of the Martin and a list of users near you. Write

Owensboro Ditcher & Grader Co., Inc.
1591 Wazee Street Denver, Colo.

10 Days' Free Trial

Martin Takes the labor and expense out of every dirt moving job

PRETTY COSTUMES

Selected by Isabel Sinclair

These costumes are all carefully chosen with a view to their adaptability to the needs of the home dressmaker. None is elaborate or complex and all can easily be made from the patterns provided by this department. To get any of the patterns send ten cents in silver or stamps to Pattern Department, Orchard and Farm, "Examiner" Building, Los Angeles.

2613—Popular Suit for Small Boy

Cut in 4 sizes: 2, 3, 4 and 5 years. Size 4 requires 3⅝ yards of 27-inch material. Price 10 cents.

3038-3040—A Stylish Costume

Waist 3038 cut in 6 sizes: 34, 36, 38, 40, 42 and 44 inches bust measure. Skirt 3040 cut in 6 sizes: 22, 24, 26, 28, 30 and 32 inches waist measure. The entire dress will require 8 yards of 42-inch material for a medium size. The skirt measures about 1 2-3 yards at the foot. Two separate patterns, 10 cents for each pattern.

3033—"Tunic" Dress

Cut in 3 sizes: 16, 18 and 20 years. Size 18 requires 5⅜ yards of 44-inch material. Width of skirt at lower edge, 1¾ yards. Price 10 cents.

2679—Girl's Dress

Cut in 4 sizes: 2, 4, 6 and 8 years. Size 4 will require 2⅜ yards of 36-inch material. Price 10 cents.

3061—Doll's Set

Cut in 5 sizes for dolls: 16, 18, 20, 22 and 24 inches in height. Size 18 will require ⅝ yard of 36-inch material for the dress, ⅝ yards of 40-inch material for the cape, and ⅛ yard of 20-inch material for the bonnet. Price 10 cents.

3049—Ladies' "Cover-all" Apron

Cut in 4 sizes: Small, 32-34; medium, 36-38; large, 40-42; and extra large, 44-46 inches bust measure. Size medium requires 4⅝ yards of 36-inch material. Price 10 cents.

3043—Girl's School Dress

Cut in 4 sizes: 8, 10, 12 and 14 years. Size 10 requires 3⅜ yards of 44-inch material. Price 10 cents.

3035—Girl's School Dress

Cut in 3 sizes: 12, 14 and 16 years. Size 14 will require 5⅛ yards of 27-inch material. Price 10 cents.

3032—Ladies' House Dress

Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5⅝ yards of 36-inch material. Width of dress at lower edge is about 2 yards. Price 10c.

CATALOGUE NOTICE

Send 10c in silver or stamps for our up-to-date fall and winter, 1919-1920 catalogue, containing 550 designs of ladies' misses' and children's patterns, a concise and comprehensive article on dressmaking; also, "Some Points for the Needle," illustrating 36 of the various simple stitches. This book contains many valuable hints for the home dressmaker.

Use Coupon in Ordering Patterns

Herewith find.....cents, for which send me the following patterns:

Pattern No..... Size .....

Pattern No..... Size .....

Pattern No..... Size .....

Be sure to give number and size. Send orders for patterns to ORCHARD AND FARM, "Examiner" Building, Eleventh and Broadway, Los Angeles. Be sure to sign your full name and address below.

Sources of Valuable Information

The successful modern food-producer takes into account the sources of information which are most reliable, and adds them to his store of ready references... When such bulletins as those mentioned below may be obtained free, there is an added inducement to "obey that impulse."

A NUMBER of new bulletins have been issued and may be obtained free upon application to the Division of Publications, United States Department of Agriculture, Washington, D. C. Among those of interest to Western farmers are

	FARMERS' BULLETIN
Preparation of Barreled Apples for Market	1050
Fungous and Insect Enemies of the Pear	1056
Laws Referring to Fur Bearing Animals, 1919.	
Feeding Hens for Egg Production	1057
Production of Late Crop of Potatoes	1064
Standard Varieties of Chicks (III—The Asiatic, English and French Classes)	1052
Take-all Disease and Flag-Smut	1063
Loco-Weed Disease	1054
Country Hides and Skins (Preparation, Marketing)	1055

The following publications of the University of California may be obtained free from Director, Agricultural Experiment Station, Berkeley:

Circular on Milking Machines, including conclusions from tests (No. 311).

Circular on How to Build a Septic Tank for Sewage Disposal.

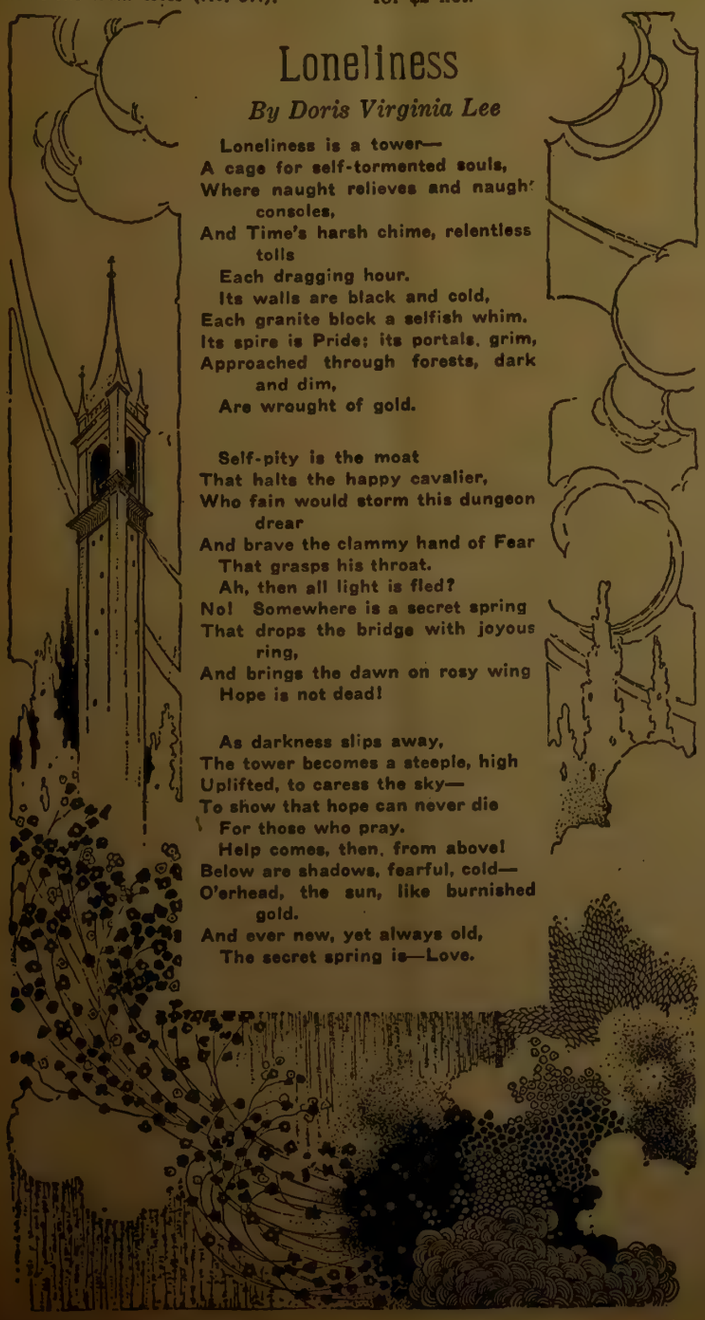
Feeding Dairy Cows, Circular No. 215.

Seed Treatment for Prevention of Cereal Smuts, Circular No. 214

Mariout Barley, with discussion of barley culture in California, Circular No. 312.

One of the finest publications ever issued by the University of California has been published by the University Press. It is a monograph of some 600 pages, embodying sixteen color plates and ninety-four illustrations, entitled, "The Game Birds of California." Every lover of sport and our feathered friends should read this wonderful book. It is now on sale at book stores throughout the State, or may be obtained from the University Press, Berkeley.

A notable addition to agricultural literature is the book by James B. Morman, A. M., Assistant Secretary of the Federal Farm Loan Board, entitled, "The Place of Agriculture in Reconstruction." It is a study of national programs of land settlement. This work is published by E. P. Dutton Company, New York, and sells for $2 net.



Loneliness

By Doris Virginia Lee

Loneliness is a tower—
A cage for self-tormented souls,
Where naught relieves and naught consoles,
And Time's harsh chime, relentless tolls
Each dragging hour.
Its walls are black and cold,
Each granite block a selfish whim.
Its spire is Pride; its portals, grim,
Approached through forests, dark and dim,
Are wrought of gold.

Self-pity is the moat
That halts the happy cavalier,
Who fain would storm this dungeon drear
And brave the clammy hand of Fear
That grasps his throat.
Ah, then all light is fled?
No! Somewhere is a secret spring
That drops the bridge with joyous ring,
And brings the dawn on rosy wing
Hope is not dead!

As darkness slips away,
The tower becomes a steeple, high
Uplifted, to caress the sky—
To show that hope can never die
For those who pray.
Help comes, then, from above!
Below are shadows, fearful, cold—
O'erhead, the sun, like burnished gold.
And ever new, yet always old,
The secret spring is—Love.

Bean Spray Pumps

Have always been dependable

36 Years
—always efficient
—always durable
—always economical

They represent today more than ever before the grower's surest means to a better crop and resultant better profits. Our catalog recites many reasons why "The Bean Is the Best." Learn about these and other Bean features:

BEAN PRESSURE REGULATOR
BEAN THREADLESS BALL VALVES
BEAN PORCELAIN LINED CYLINDERS

Our new Simplicity Sprayers are now ready. Ask about them! Mail the coupon today!

BEAN SPRAY PUMP COMPANY

178 W. Julian St., San Jose, Calif.
579 Hosmer St., Lansing, Mich.

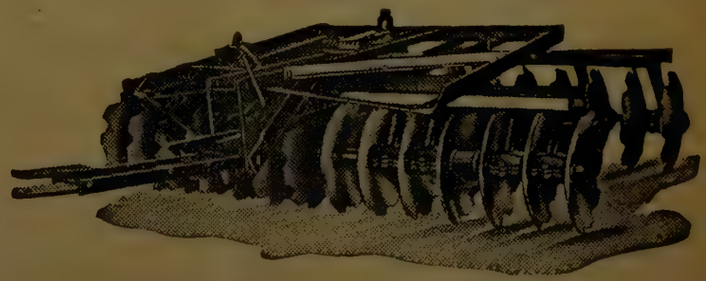
CLIP AND MAIL
Bean Spray Pump Co., 178 W. Julian St., San Jose, Calif.
Gentlemen:—Please send me a copy of your catalog. I have ..... acres of ..... in Hand Pumps..... Power Sprayers..... Accessories.....
Name .....
Address .....

AT LAST—IT'S HERE

A GREAT LEVERLESS TRACTOR DISC

With an Automatic Adjustable **HITCH**

It offers more advanced ideas of construction than were ever before presented. You can get a disc now without levers sticking upon it to break off tree limbs or to break your back "throwing her out" of the ground.



The Best "Leverless" Automatic Disc Ever Invented

We have ready for distribution a new tractor disc with the best automatic features ever invented

The angle of the disc is given by pulling a rope attached to a trip lever on the disc and brought forward to the tractor driver's seat. To change from straight to working angle, all that is necessary is to pull the rope attached to the trip lever which sets the disc to any angle desired.

Besides the automatic features which give this disc an advantage everyone desires, the automatic is one of the heaviest and strongest ever constructed, having braces and cross braces of steel angle irons. This is not a trailer type harrow. It is absolutely impossible for the rear gang to trail the furrows made by the front gang. The frame is rigid. The disc cuts down ridges, fills up holes and levels the ground. Every feature of the construction is for utility and hard service. Made for tractors in 5, 6, 7, 8, 9 and 10 foot sizes, with either 18 or 20 inch cutaway or solid discs. Farmers who expect to buy a disc soon, should be sure to see this new automatic disc with its many improved features. All sizes on display at the salesrooms of

E. P. BOSBYSHELL CO.,
127 North Los Angeles Street, Los Angeles, Cal.

Write for name of your nearest dealer showing this disc.

What has the Design to do with "Pull"?

At first thought, it may seem a simple matter to design a track like that of the "Caterpillar" Tractor, in such a way as to eliminate all the power-waste possible and reduce upkeep to the minimum. Actually, it has taken a quarter century to perfect the "Caterpillar" Track.

And so, throughout the "Caterpillar" Tractor, correct design is largely responsible for its almost unbelievable power and durability.

The secret of "Caterpillar" Tractor "pull" is, that correct design enables the power of the motor to reach the drawbar with minimum loss and friction. That's why the "Caterpillar" Tractor has always out-pulled other tractors of equal rated horse-power, and why "Caterpillar" maintenance expense is lowest.

Superior construction is not always evident to the eye. Results reveal more than appearance, and no other machine can duplicate Holt results.

Folder No. 413 explains other "Caterpillar" Tractor points of superiority. If you are interested in tractors you should send for it.

The Holt Manufacturing Company
Stockton, Cal., Peoria, Ill., Los Angeles, Cal., Portland, Ore., Spokane, Wash., San Francisco, Cal.

CATERPILLAR
Reg. U.S. Pat. Off.

Diversification vs. Specialization

(Continued from Page 7)

given farm, so as to include a greater degree of diversity, there are certain axioms which should be borne in mind. These are:

1. Maintenance of fertility includes correct crop rotation, green manuring, keeping of animals, fertilization and proper cultivation. Loss of fertility means loss of earning power. Outlining of ways to conserve and increase fertility must therefore constitute a large part of the working plan.

2. Proper distribution of labor throughout the season permits the utilization of a uniform force and provides steady employment.

3. The best money-making crops for the acreage available should be selected.

4. Since these principles are essential to the greatest profit, it is evident that mixed farming offers the easiest way to bring about the best results. Such farming affords greater ease in maintaining fertility when rotation or general fertilization must be resorted to. It gives more ways of securing income so that the failure of one particular crop will not seriously affect the year's returns. Moreover, certain industries naturally go together to economic advantage, thus permitting correct utilization of by-products.

In discussing factors of good farming, it has been pointed out that there are four principles which are well worth keeping in mind. These are:

(a) Rotation of crops tends to increase the crop-producing power of the soil, to equalize labor distribution, to destroy pests and to balance animal and crop production.

(b) A legume should be grown upon the land at least one year in four.

(c) An optimum humus content in the soil should be maintained by the growing of cover crops and by the application of manure, or both.

(d) The judicious use of mineral fertilizers, combined with manures (both green and yard) will, under proper cultural methods, maintain the crop-producing power of the soil.

All of the above factors depend for their accomplishment upon diversification. Leaving the decision to the "jury" of readers, the defense here rests its case.

Winter Work in the Garden

By Charles L. Schufeldt

"FOR every month is garden month here in California." Yes, indeed, we should plant garden things in December and January and February. Vegetables, for the first time in California have joined other foods in price-skyrocketing. All the more reason why special attention should be given the home garden this winter.

In almost every part of our favored land we may safely plant in the open ground the following vegetables at this season: Lettuce plants, lettuce seed in favorable localities, radish seed, beet plants or seed in favorable places, carrot seed in warm soil, onion sets, kale plants or seed, cauliflower plants, endive plants or seed, kohl rabi plants or seed, Chinese cabbage, Chinese mustard, garlic, cloves, parsley seeds or plants, rhubarb plants, spinach seed, Swiss chard plants or seed, turnip seed, blackberries, raspberries and loganberries.

This is an excellent time to make the asparagus bed. It is also just the right time to plant the tomato seed and pepper seed in the hot bed for the early spring crop. If there is no hot bed and no one to build one, the plants may be grown in a sunny kitchen window. The hot bed may also have space for some delicious French forcing carrots, a few rows of leaf lettuce and some 21-day juicy radishes.

How to Plant

If we are to plant seeds or plants in the open ground we must realize that at this season extra care must be taken in the preparation of the soil. We can afford to take this care because the products we grow will bring a good, high price whether sold on the market or to our own home table. Soil which contains a good supply of organic matter (decayed vegetation or manure) will be warmer than soil with but little of such material. In soil rich in this decayed matter seeds will germinate much more quickly than in stiff clays, adobes or any soils deficient in organic matter. At this season the soil must be made very loose in order to admit air. Soil should not be firmed around the seed nearly as closely now as in the summer.

What to Plant

Los Angeles market lettuce is the best variety for the open field. Plants may be obtained from the big fields when market gardeners are thinning. Set the plants about 6 inches apart on each side of low ridges. Lettuce must not be subjected to drouthy conditions.

There are many good radishes. The scarlet, turnip-shaped, white-tipped radish is good. The French breakfast is a favorite. Some relish the hardy but rather strong icicle radish, or the large Mikado.

Beet seed may be planted one inch deep in warm soil not too moist but containing sufficient moisture to start the plants growing without irrigation after planting until rain comes or the plants are an inch or two high. Generally speaking, all seeds are planted shallower at this time than in warmer weather.

Carrots for Health

By all means have a good bed of carrots growing for January, February and March harvesting. They will be rather slow to germinate at this season except in the warmer sections on southern exposures, where the soil is loose and well filled with decayed vegetable matter.

Sow the seed rather thickly and be prepared to do some thinning. If the locality is away from ocean influence and favorable soil and slope are not available, wait until February, but don't fail to have carrots all the year round by planting in February or March and again in June and again in September or October. The ones planted last will supply the table during December, January, February and March. Carrots are exceedingly healthful and should be used as a goodly portion of the ration two or hree times a week all the year around. They are fine eaten raw, grated or ground in salad. The French people eat many carrots. In that country there is common greeting translated as follows:

"Good evening! How are you?"

"Thank you, I am fine. I have eaten a carrot, and how are you?"

"I, too, am fine. I have eaten a carrot also, and I thank you."

The French have a number of famous sanitariums where the "carrot cure" for dyspepsia is administered. French Forcing is the most delicate variety. Perhaps the most popular general purpose carrot is the Danvers Half-long. Carrots are excellent feed for rabbits, poultry, horses, cows and hogs.

Timely Vegetables

This is an excellent time to plant a bed of onion sets or garlic cloves. Leeks and chives also may be planted now. Sets are available in most stores. The white ones generally make the most delicately flavored onions; yet the brown sets are very popular. There is no other vegetable which responds more readily to good rich soil, well supplied with manure, than the onion.

If cabbage, cauliflower, kohl rabi or kale plants can be had it is safe to plant them now in most sections. It will scarcely pay to sow the seed in open ground this month. Seed sown now in protected cold frames will be ready to transplant into the open ground in February. Cannon Ball is the most popular variety, but Winningstadt is the finest flavored. California Pearl and Snowball cauliflower are good. White Vienna kohl rabi and tall Jersey kale are excellent varieties.

Endive makes a delicious and very healthful winter salad. It is very rich in iron and mineral salts. Endive also is a popular green for cooking as spinach is cooked. Many people prefer a combination of endive and spinach to spinach alone.

No other salad plant for cooking is as popular as winter spinach. "Prickly-seeded" is best for December planting. Spinach contains more mineral salts than any other garden salad plant.

Any one who has not eaten Chinese mustard and Chinese cabbage has failed to enjoy one of the finest of all garden plants. Both may be grown from seed or from plants at this time of the year. These two plants are grown practically the same as lettuce.

Parsley Is Seasonable

This is a good time to start a small bed of parsley to last for a full year from the single planting.

The best rhubarb is Wagner's Giant. Crimson Winter is also popular. Be sure the soil for rhubarb is enriched two feet or more in depth. Set the plants on low ridges so that rains or irrigation will not flood the crowns with water.

Turnips are easily grown in winter and every home garden should have a supply of Early White Globe turnips growing in extra rich soil on a southern exposure.

Asparagus Bed

To quite an extent one can judge the permanency of habitation and the home-loving qualities of the people of a community by the frequency of asparagus beds in the gardens. It requires two years to establish a good asparagus bed, but once well established it lasts six or eight years or even longer. Fresh picked as-

paragus is incomparably more delicious than that which must pass through the channels of trade before reaching the kitchen.

Let us prepare our asparagus bed at once. Dig the soil out for three feet in depth and make sure there is half as much well-rotted manure put back as soil; that is, in filling the trench use one part of manure to two parts of soil. Set the plants about 18 inches apart each way in the bed or set in rows about three feet apart and one foot apart in the row. In open field culture the rows are spaced farther apart. Once each year give every plant or hill of plants a handful of rock salt.

Plenty to Do Now

December is a cool month but it should witness much activity in the garden. In planning the winter garden and the early spring planting, we

Photograph, Courtesy Germain Seed Co.

"Petsai," or Chinese Cabbage

should bear in mind that all food is not vegetable food. We can lower the cost of living by growing domestic animals such as poultry, rabbits, goats, pigs and squabs. The greatest economy in producing food from domestic animals is secured when the feed for them is largely home grown. The garden will produce also many products to feed these animals.

How to Grow Sage

A subscriber requests directions for growing sage in the garden. Mammoth, broad-leaf sage is a good variety for the garden. Seeds may be sown in an open bed as is done with cabbage. Cuttings or slips should be set out in a shady place as early in the spring as possible. The soil should be rich and well-manured, prepared as for cabbage, corn or any ordinary garden truck. Set plants about twelve inches apart in rows eighteen inches apart. A nominal amount of water is required—about the same as would keep any small shrub growing. If a crop is desired the same year, rooted plants should be set out as early as possible.

The plants should be divided every two years. Sage is very prolific and will make four or five "pickings" each season. The leaves and tender shoots are then dried, to be ground for use.—C. L. S.

Now, as the calendar inclines
Towards Christmas time, we know—
That there'll be certain monkey-shines
Beneath the mistletoe.

6% loans to farmers!

Do you want money on a *non-maturing mortgage* for a term of 5 to 40 years? Do you want to re-finance your present mortgage? increase your land holdings? buy additional equipment or live stock?

The farmers, horticulturists and stock-owners of California and Oregon may now obtain 6% loans ranging in amounts up to $37,500. This has been made possible thru the recent organization of the California Joint Stock Land Bank of San Francisco.

Loans made by this bank may be paid off any time after five years—and the borrower may enjoy the unusual privilege of taking 40 years to repay his loan in installments.

The loans are made under the supervision of the United States Government.

Important Features

1. No limitations or special conditions as to how money borrowed shall be used.
2. The mortgage never becomes due. You pay no renewal expenses.
3. Payments may be extended over a period of 40 years.
4. The land may be sold subject to the mortgage.
5. The borrower pays no commission. We loan *direct* to farmers. Loan made up to 50% of appraised value of the land, and 20% of the insurable improvements.
6. Positively no red tape of any kind.
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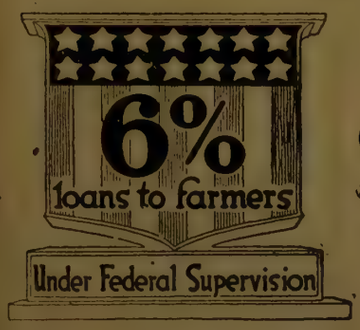
E. C. Aldwell, Sec'y Treasurer.

Write for further information. Address all letters to



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Has TELESCOPE with magnifying glasses which enable you to see cross on Target quarter of a mile. Pays for itself on the first job of

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Best investment any land owner ever made with Twenty-Two Dollars and Fifty Cents. Simple, accurate, durable and complete with full instructions. Used and endorsed by Agricultural Schools, County Demonstration Agents, and farmers from Atlantic to Pacific, and you will endorse it too after using it—if not your money back.

Write for description of Level and TELESCOPE details of money back guarantee; also name and address of our distributor in your section.

BOSTROM-BRADY MANUFACTURING CO
88 Stonewall Street, ATLANTA, GA.

CONSTIPATION CURE. No drugs. Money back guarantee. See ad on Page 30.

$136 IN PRIZES!

LAST CALL! WRITE BEFORE JANUARY FIRST!

The Prize Contest for HELPFUL HINTS positively closes this month. Scores of contributions have been received. Many are published in this issue. Names of winners will be published early in the New Year. Every entry will be considered whether published or not. No limit to number of entries from each contestant.

Just tell in less than 1000 words, the simple story of some successful enterprise, or describe a money-making, time-saving helpful plan that you have used or observed. You don't have to be a writer. But you must act quickly in order to win a prize.

Address Editor, Orchard and Farm, 1111 So. Broadway, Los Angeles, and mark your letter, "For Helpful Hints Contest." Give full name and address.

PRIZES

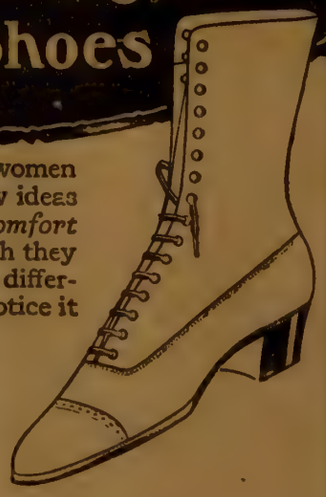
FIRST	$ 25.00
SECOND	20.00
THIRD	15.00
FOURTH	10.00
FIVE PRIZES of (each)	5.00
SEVEN PRIZES of (each)	3.00
TEN PRIZES of (each)	2.00

Remember, THIS IS YOUR LAST CHANCE! ACT NOW!

Don't fail to mention Orchard and Farm when you answer advertisements. It is to your advantage as well as ours.

Easy on Your Feet and Stylish

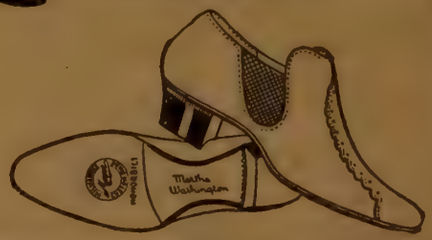
Mayer Martha Washington Shoes



THESE fine shoes for women will give you some new ideas about comfort and style. *Comfort* was the original idea on which they were built—and they feel so different on your feet that you notice it the moment you try them on. It's much more than ordinary shoe comfort.

AND Martha Washington Shoes give you comfort without a sacrifice of style. All the latest styles are included in this line—high and low cut, lace and button. You will notice they have an excellence of detail that gives them the stamp of quality. They wear as well as they look and feel. Martha Washington Shoes are built on honor!

BEWARE of imitations. The genuine have the Martha Washington name and Mayer Trade Mark on the shoe. If your dealer doesn't handle them, write us.



This shoe has been widely imitated. Look for the name and trade-mark on the sole or label in the top.

MILWAUKEE Mayer CUSTOM MADE HONORBILT

F. Mayer Boot & Shoe Co.
Milwaukee, Wis.

FOUR THRIFT STAMPS

Are given by Orchard and Farm to each boy or girl contributing an original, interesting letter on some phase of Club Work or "An Unusual Plan for Making Money." Two letters are published this month. What is YOUR plan? Address, Editor Orchard and Farm, 1111 South Broadway, Los Angeles, and give full name and address.

Herbert Wins Stamps!

Here's an Oregon boy's plan for making money. Do you not think it a good one?

"I believe others in small towns could make money by my plan. In the fall I ask permission to pick up, on Saturdays and after school, all the cull apples, small potatoes and acorns, which would be of no use to their owners.

"I then buy a pig for a few dollars from some farmer nearby. Every evening I go to the stores and collect all the garbage. In this way, with what table scraps I can gather together, I feed the pig at a very small cost. I sometimes get a little buttermilk from the creamery. Occasionally I mix shorts with the buttermilk. Later in the season I sell my pig, thus making quite a little profit from things that would otherwise go to waste.—Herbert Doran, Ashland, Ore."

Here's Another Winner!

There are many boys and girls making money from rabbits. Here's a new angle of the business:

"My brother makes money by tanning and selling rabbit skins. The United States Department of Agriculture, Washington, D. C., will supply addresses of buyers for the pelts. (Instructions for tanning were published in the August number of Orchard and Farm.) The skins are used in large quantities by Eastern hat manufacturers. It is said that one concern will need thousands of skins this year. Wild cotton-tails, jack rabbits and home-raised domestic rabbits all have marketable pelts. The skins sell by the pound."—Nellie Fuller, Folsom, Cal.

The "Rattler"

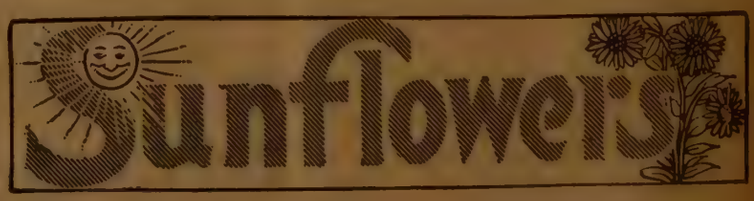
HOW old is a rattlesnake? It has always been a source of satisfaction to believe that a rattlesnake's age could be determined from its rattles. The very simplicity of the theory recommended it. What could be easier? A rattlesnake gets a new ring on its rattle every year. Count the rings and you have his age. Now the scientists come along and explode the theory.

They have kept rattlesnakes in captivity under their normal, native conditions and studied them.

When a rattlesnake is born, they observed, it is provided with a small button at the tip of its tail. A few months after birth it sheds its skin. In two months more it sheds its skin a second time, and in so doing uncovers the first ring or segment of the rattle which has been developing under the epidermis. Therefore, every time it sheds its skin it uncovers a new segment. Under normal conditions, a rattlesnake sheds its skin three times a year, but unusual climatic or food condition may vary the number of moults.

The rattle is a rather delicate organ. The snake wears out the older rings dragging them around over rough, rocky ground. A rattle seldom attains a length of more than ten or eleven rings, as when that number has been acquired the vibration at the tip, when the organ is used, is so pronounced that additional segments are soon worn, broken, and lost. And thus science upsets another popular theory.

Pa Beetle: "Great Caesar's potato patch! We can thank our lucky stars we don't have to fill THAT youngster's stockings for Christmas!"



Observant Uncle Mortimer

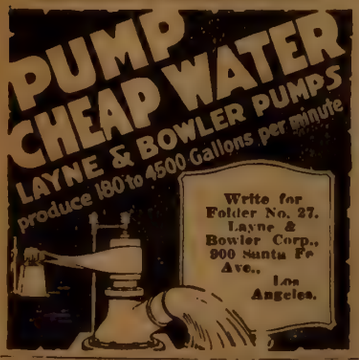
Uncle Mortimer Pease says he can always tell a true musician by the way he acts when the telephone bell rings while the phonograph is playing. The person who doesn't care much for real music will stop the record instantly, while the true musician is sure to wait until the end of a phrase or strain. It actually hurts his ear to have the piece broken off in the middle of a measure and he had rather risk losing the call than upset his sense of harmony.

Who'll Deny It?

The soil's the basis of all wealth,
(A rule that never varies)
A source of happiness and health,
As well as spuds and berries.

Why even diamonds and gold—
Just store this in your garret!—
Wherever they are bought and sold,
Are measured by the carrot!

—Justin Nutt.



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I have no dope for sale. No drugs, unpleasant diet or burdensome exercise. Send 50 cents TODAY for booklet. Money promptly refunded if not absolutely satisfied after 10 days. What could be more fair? Coin well wrapped, check, money order or stamps. Drugs and delay are dangerous.
J. CHARLES KAYE,
P. O. Box 262, Los Angeles, Cal.

Where Is He Now?

In these days of the "soft cuff" what, oh, what, has become of the old-fashioned man who used to write "Meet Mary at 9" or "Note due at bank" with indelible pencil on the nicely laundered cuff of his white shirt and thus bring down on his head the maledictions of Friend Wiff? Remember?

Sad, But True !

It's fine to have a lot of push,
And plenty of ambition.
But sometimes Pull will get the cush
While Push is still a'wishin'.
—Justin Nutt.

Perhaps Public Prefers Peas!

Practical Peter proposes pointing out perfect pumpkins pay. Peter pridefully presents pyramidal pile perfect pumpkins. Perhaps poor pumpkins pay, Peter parries petulantly; perhaps people prefer poor pumpkins; poor pumpkins produce puny pennies. Perfect pumpkins pull, proportionately, princely profits. Poor Peter, pretending politeness, passionately prefers perfect pumpkins. Poor pumpkins plentiful; perfect pumpkins practical. Produce perfect pumpkins, pleads Peter. Pursue progressive policy: Plan, plow, plant, propagate perfect pumpkins. Peter's plan pleases people!

The "Green" Hand

The Boss: "We'll have to hunt up some new sections for your mowing machine."

His Nibs: "Gosh, how much hay do you grow on this ranch? Seems to me I've ridden that mower over a section and a half already!"

A Soldier's Prayer

[The following verses were sent to Orchard and Farm by Miss Anna Libeu, an American Red Cross nurse, who obtained them from an injured doughboy in a Base Hospital in France. No doubt they will touch the hearts of all returned service men, as well as other readers cognizant of the perils and hardships of soldiering.—The Editor.]

Now I lay me down to sleep;
I pray the Lord my clothes to keep.
Grant no other soldier take
My socks or shoes before I wake.

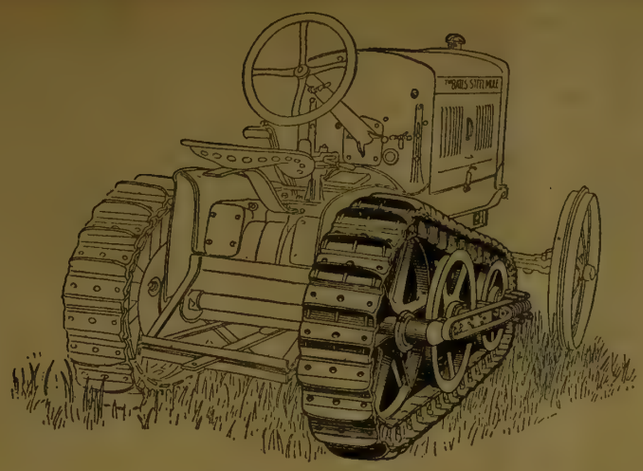
Keep me safely in the Light;
Let no fire calls sound at night,
And in the morning may I wake
Breathing scents of sirloin steak!

Deliver me from work and drills,
And when I'm sick don't feed me pills,
And should I hurt this hand of mine
Don't daub it up with iodine.

In my snowy feather bed,
I long to lay my weary head.
Far away from other scenes,
And the smell of half-baked beans.

Take me back into the land
Where I'll walk not in the sand—
Where no thrilling bugle blows,
And the women wash the clothes!

There, Willie Bug, doesn't that prove it? Don't tell ME there is no Santa Claus!



Bates Crawler Durability

The Facts

Seven years of constant crawler tractor building has developed a Crawler for the new Bates Steel Mule which is the simplest and most durable Crawler ever built.

Special, secret process hardened steel is utilized in the production of the Crawlers. Alloy steel pins and bushings are 100% oversize, thus allowing a smoothness of operation that is a real assurance against wear. Working parts are enclosed making them dust proof.

As hundreds of Bates Steel Mule owners are today running their first Bates Crawlers for the sixth consecutive year, it is easily realized why the present Bates Crawlers symbolize the perfection of durability.

Ask for catalog today

J. M. CONLEY CO.
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F. T. BRILES
214 N. Los Angeles St., Los Angeles, Cal.

Manufactured by BATES MACHINE & TRACTOR CO., Joliet, Illinois

The New Bates Steel Mule

—the Most Efficient Tractor in America

F1000

Raising Geese

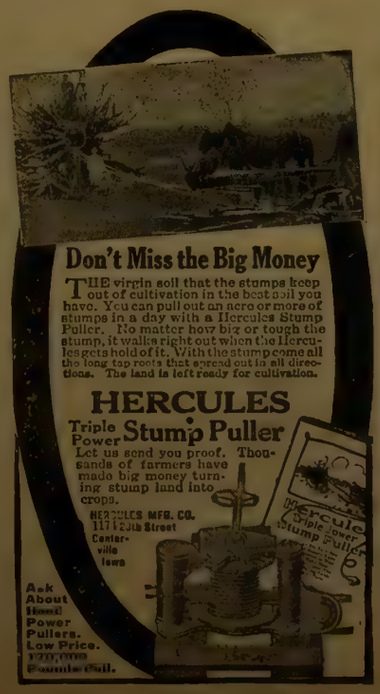
(Continued From Page 14.)

business of goose fattening are interesting. When fully feathered, six to eight geese are generally confined for three weeks in a pen and fed by hand five times daily on a mixture of two parts of corn meal and one part of ground wheat and sifted ground oats mixed with enough low-grade flour to make a stiff batter when water is added. This mixture is put through a sausage stuffer, cut into pieces two inches long and one inch thick, rolled in flour, and cooked like dumplings.

The material is fed warm, and after cooking, the pieces are dipped in cold water to keep them from sticking together. Another method is to confine the geese in large pens under a shed for from three to five weeks and keep whole corn in hoppers before them all the time, using oat straw for bedding, as this material is a good source of roughage, particularly where corn silage is used as a supplement.

Feather Harvest

Nearly all breeders of geese in the South pluck the feathers from the live geese at some time prior to molting. Feathers are ripe for picking when the quills appear dry and do not contain blood. The average yearly production of feathers of geese is about 1.1 pound.



RHEUMATISM

A Home Cure Given by One Who Had It

In the spring of 1893 I was attacked by Muscular and Inflammatory Rheumatism. I suffered, as only those who have it know, for over three years. I tried remedy after remedy, and doctor after doctor, but such relief as I received was only temporary. Finally I found a remedy that cured me completely, and it has never returned. I have given it to a number, who were terribly afflicted and even bedridden with Rheumatism, and it effected a cure in every case.

I want every sufferer from any form of rheumatic trouble to try this marvelous healing power. Don't send a cent; simply mail your name and address and I will send it free to try. After you have used it and it has proven itself to be that long-looked-for means of curing your rheumatism, you may send the price of it, one dollar, but understand, I do not want your money unless you are perfectly satisfied to send it. Isn't that fair? Why suffer any longer when positive relief is thus offered you free? Don't delay. Write today.

Mark H. Jackson, No. 7581 Gurney Bldg., Syracuse, N. Y.

Mr. Jackson is responsible. Above statement true.

FISH

Salmon in brine, 100 lbs., $11.00. Shipping weight, 165 pounds. Smoked Salmon, 20 lbs., $3.40. Dried Codfish, 10 lbs., $1.75. T. A. Beard, 1322 Winslow Place, Seattle, Wash.

Last Big Block of the Canadian Pacific Reserved Farm Lands

THIS announces the offering of the last big block of the Canadian Pacific Reserved Farm Lands. Until this block is disposed of you can secure at low cost a farm home in Western Canada that will make you rich and independent. The country is ideal for mixed farming as well as grain growing. Later, the same lands can be bought only from private owners—and naturally, prices will be higher. Never again on the North American Continent will farm lands be offered at prices so low.

Your Last Big Opportunity

This block contains both fertile open prairie and rich park lands in the Lloydminster and Battleford Districts of Central Alberta and Saskatchewan. You can buy farm lands on the rich prairies of Manitoba, Saskatchewan and Alberta for $11 to $30 an acre. Or land in Southern Alberta under an irrigation system of unfailing water from $50 an acre and up.

Twenty Years to Earn and to Pay

The Canadian Pacific offers you this land under a plan of long term, easy payments that is remarkable in the history of farm investments. You pay down 10%. Then you have no payment on the principal until the end of the fourth year, then fifteen annual payments. Interest is 6%. In central Saskatchewan, Seagar Wheeler grew the world's prize wheat. World's prize oats were grown at Lloydminster.

Lands Under Irrigation

In Southern Alberta, the Canadian Pacific Railway has developed the largest individual irrigation undertaking on the American Continent. This district contains some of the best lands in Canada. An unfailing supply of water is administered under the Canadian Government. Prices range from $50 an acre up on the same easy payment terms.

M. E. THORNTON
Supt. of Colonization
Canadian Pacific Railway
961 First Street, E., Calgary, Alberta

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No Taxes on Improvements

There is a small tax on the land—seldom more than 20c an acre for all purposes but there are no taxes on your livestock, buildings, improvements, implements or personal effects. Good markets, modern schools, roads, churches, amusements, make farm life desirable and attractive. Here you can achieve independence.

No Sale Without Investigation

The Canadian Pacific will not sell you a farm until you have inspected it. You must be satisfied — and every question answered before taking up your home. Investigation is invited and made easy. Don't delay your investigation. This announcement calls attention to the last great block of Canadian Pacific Reserved Farm Lands.

Special Rates for Homeseekers and Full Information

Special railway rates for homeseekers make inspection easy. Send now for free illustrated pamphlets answering all questions and setting forth figures about land values, acreage yields, climate, opportunities, etc. Do not delay. Send coupon below for information.

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CANADIAN PACIFIC RY.,
961 First St., E., Calgary, Alberta
I would be interested in learning more about:
- ☐ Irrigation farming in Sunny Alberta.
- ☐ Farm opportunities in Alberta, Saskatchewan and Manitoba.
- ☐ Special railway rates for homeseekers
- ☐ Business and industrial opportunities in Western Canada.
- ☐ Town lots in growing Western towns.

My name .....
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Harvest 20 to 45 Bushel to Acre Wheat in WESTERN CANADA

Think what that means to you in good hard dollars with the great demand for wheat at high prices. Many farmers in Western Canada have paid for their land from a single crop. The same success may still be yours, for you can buy on easy terms,

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Learn the Facts About Western Canada

—low taxation (none on improvements), healthful climate, good schools, churches, pleasant social relationships, a prosperous and industrious people.

For illustrated literature, maps, description of farm opportunities in Manitoba, Saskatchewan and Alberta, reduced railroad rates, etc., write Department of Immigration, Ottawa, Canada, or

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To Destroy Moles

The common mole, erroneously accused of eating bulbs and roots and thus destroying plant life, really lives on grubs and insects exclusively. Since his burrows, however, are used by mice and rats which do the damage to the plants, extermination of the mole is advisable. Moles are furthermore directly the cause of much damage to lawns and pastures through the construction of their burrows. Here is a good method of destroying moles:

With an iron spoon or trowel, cut a piece about two inches in diameter from the top of a well-defined mole runway, clean out the earth that tumbles down, and sift at the bottom of the runway about two tablespoonsful of common concentrated lye. Then cover the hole with a piece of board or slate to make it dark as before. At different and more remote spots in the runs perform the same operation.

In a few moments the crystals of lye, breaking down through absorption of moisture from the earth, become a sticky mass, of the consistency of liquid glue. The front footpads of the moles will be seared by contact with the caustic and in attempting to lick the feet they take enough of the lye internally to produce death. Try it.—Bronte A Reynolds.

Morning Glory Remedy

A Carpenteria farmer has been successful in driving out the morning glory pest, according to Eugene Kellog, Santa Barbara County Horticultural Commissioner.

The method used was to plow the ground every six weeks and cultivate every two weeks throughout the year. The horticultural commissioner says that the morning glory has to lay in stores from the sunlight to be able to weather the winter, and if every leaf of the plant is kept down, it will die for lack of starch during the winter season.

Realizing that the morning glory pest is one of the most serious problems facing California agriculturists, a concerted attempt is being made to develop a successful eradication program to be carried out in all infested districts, and those making a study of the subject predict that a combination of methods will be worked out within the next year. In some sections land values and tax receipts have been greatly diminished by the morning glory pest. The program will probably include inspection and cleaning of threshing machines and restriction of movement of bean straw and other seed-carrying agencies.

Simple, But Very Effective

A good way to remove mower-sections is to place the cutter-bar on the wheel of the machine, as shown in the illustration, and cut the rivets by striking the top of the sections with a hammer. This simple expedient may save time when no anvil is available.

Cure for Blister Mite

Spring spraying having failed to control the blister mite in El Dorado County, the growers adopted a program of late fall and winter spraying with lime-sulphur; the results proved gratifying. Inspection last spring of orchards treated the previous fall showed not a single instance of blister mite infestation. The El Dorado program, which is expected completely to eliminate this pest, will include dipping of incoming nursery stock.

If that new rope is hard and twisted, use the cowboy's remedy. Tie it to the wagon or saddle and drag it on the ground for awhile.

A Useful Implement

I have devised a tined scraper with sharp teeth that is very successful for dragging manure, scraping heavy sod, or cleaning ditches filled with tule and wire grass. The fresno or ordinary scraper may not "touch" the work in hand, but a fork scraper of this kind may be depended upon every time. It is also "unbeatable" for piling grape vines or brush from trees. It is built somewhat like an ordinary Fresno scraper except that, instead of a solid "pan" it has merely a heavy base with long, sharp tines projecting forward. It can be made by a blacksmith or metal worker or even by a ranch handy man.—John H. Johnson, Le Moore, Cal.

What Dynamite Has Done for Me

A farmer tells how he has literally blasted his ranch out of the rocks and stumps. The great destructive agent of warfare is now the constructive servant of the up-to-date agriculturist. Our subscriber explains the methods by which he makes this powerful genie work for him.

WHILE most of your readers might "sneeze at" my little 20-acre ranch, they would thoroughly appreciate what I have done could they have seen it when it was nothing but a waste of rocky, logged-off timber land. And as a matter of fact, I must confess that although a lot of work has been done, I let dynamite and blasting powder do the most of it.

The cellar of my neat little dwelling was blown out of the sidehill almost without any other labor than the drilling of holes to hold the powder. My cave, where I keep potatoes, cabbages and other vegetables for winter use, was created in the same way. I owe my sidehill barn where I keep my horse and cow to the same powerful genie.

Large Quantities Used

But I had to use a lot of the stuff before I secured even these improvements. Where I wanted to build there were many stumps and several big boulders, not to mention outcropping rock in several places, scarcely hidden by the thin, but rich mountain soil.

The stumps mostly had been cut off about ten feet from the ground and, when blown to pieces, furnished a lot of wood for the fireplace that I built out of pieces of the boulders.

Each fruit tree that now dots my hillside farm had a hole prepared for it by the same agency, although of course I took a little more care in "shooting" for tree-planting than for other purposes.

And last, but not least, the little spring above my house, which furnishes water for stock, domestic purposes and some irrigation, was, until I blasted it out, nothing but a dirty mudhole. Now the water is free and clear.

Cost of Dynamiting

Now I hear someone saying: "It must have cost a lot of money for dynamite." Of course, the expense was considerable, but nothing in proportion to results obtained. For most of the work I used stump powder, of the kind containing only 20 per cent nitrogycerine; but in blasting out the spring and foundations, I used the 40 per cent grade. I bought the former for as little as 15 cents a pound before the war, but it is more expensive now. The 40 per cent is about 4 cents a pound higher.

Now, there are about four sticks to the pound, and where the soil was not too rocky I used only one stick to prepare the place for each tree. Figuring 4½ cents for the powder, 1½ cents for detonating cap, and 5 cents for fuse, my expense per tree was about 11 cents.

Of course, I used as much as four pounds of powder to blow out some of the largest stumps, but this usually tore up the stump so well that it was in good shape to make stove wood. I often paid for my powder by selling a load of wood in Santa Cruz, keeping the knots and roots for my fireplace. In the same way I sold building stone to several of my neighbors and thus made my cellars and foundations pay for their own blasting materials.

From Practical Experience

A few pointers about the use of powder may not be amiss. The companies selling it give very good instructions, which may be followed by anyone. In blowing stumps I use an old augur and an old-fashioned "churn" drill and put the powder in the dirt directly under the stump. I tried putting the shot in the stump itself, but this was never satisfactory in lifting them out of the ground. I use half a stick or so to blow a pocket first, which I do not tamp so that the explosion is light. Then I put in the main charge and tamp it with dry dust. An old broom handle makes a good tamper.

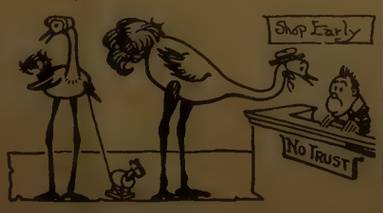
(The detonating cap is usually pinched on the end of the fuse and inserted into a stick of the powder in a hole punched with a sharp piece of wood—NEVER metal. Where more than one stick is used, some operators unfasten the paper wrapping at the ends of the sticks and place them together end-to-end, so that one cap will cause the explosion of all. A three-foot fuse is considered a safe length. Where any amount of blasting is to be done, an electric igniter is advantageous—and safer.—Ed.)

In case there is water in the ground I rub with soap the place where the fuse goes into the cap in order to exclude the moisture, and simply seal the hole with water, which is as good as any tamp. The tendency of dynamite is not to go downward. It always explodes towards the air, and you must figure on getting it deep enough to accomplish the work desired.

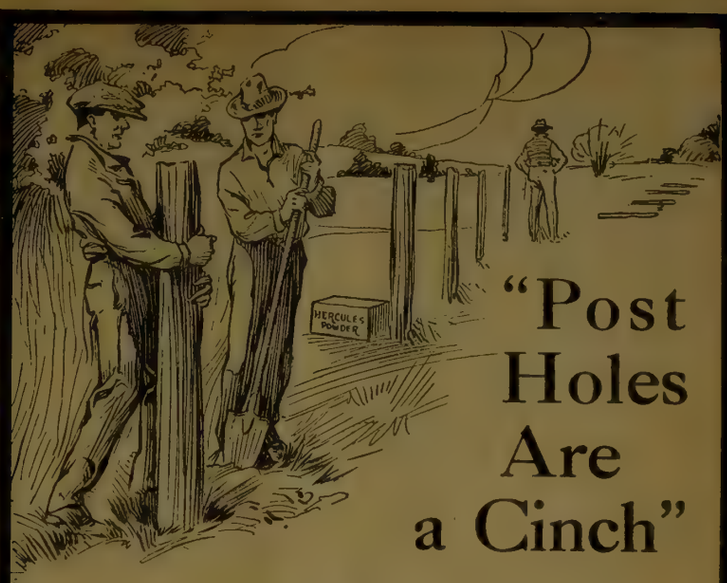
If you are careful, with a big "C," you can handle a box of dynamite with as much safety as a box of corncobs. There is a lot of land like mine not only in the Santa Cruz hills, but also in other parts of California and the rest of the United States. And unless some damphule starts another war and powder becomes too expensive for the ordinary farmer to use, many more ranches like mine can be carved out of the rocks and wilderness.—George Lyman Banks, Groveland, Cal.

Ben Is Still Having Troubles

Ben Gonnadooit says he's been intending to fix that shed roof for three months, but now that it has fallen in and killed his horse, he doesn't see any use trying to patch it up because he has no way to haul lumber. Anyway, he is too busy working on that labor-saving hay-stacker that he expects to have patented next season. Ben says he feels that the idea has developed enough that he is justified in contracting quite a few bills, as it will undoubtedly make his fortune if he can just find time to work out a few more details. His time has been pretty well taken up, though, lately in contesting the suit his neighbor brought against him for letting his ditchbank break and flooding a young alfalfa field while the owner was away. Ben says it seems like the poorer a man is, the more folks pick on him!



Mrs. Ostrich: "Two yards of iron pipe, please; my son wants some stockings to hang up for Christmas."



"Post Holes Are a Cinch"

"A half a mile of post holes is no joke when you dig 'em by hand—but with the help of *dynamite* it's a different story. Blasting the holes is a cinch and it saves more than half the work on a job like this. We've saved hundreds of dollars and days of back-breaking work this year by using

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"This 68 page illustrated book will be sent free to any farmer or orchardist who signs the attached coupon and mails it to the Hercules Powder Co."

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Prove, at my risk that you can butcher a few hogs for your own table—smoke the hams, bacon, sausage—and cut butcher bills in half. Also sell to neighbors at tremendous profit. If satisfied, keep Smoke House. If not pleased, return at my expense. You don't risk a penny. Six months to pay.

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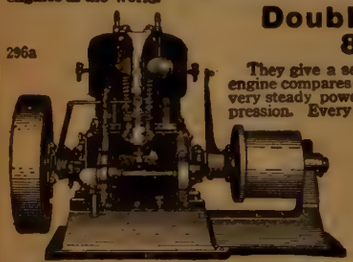
296a



Double Cylinder Motors
8, 15 and 20 H. P.

They give a service the tractor cannot give and no other farm engine compares with them in equipment. Two cylinders give very steady power. They do not wear unevenly and lose compression. Every running part protected from dust and properly lubricated. Equipped with Throttling Governor, Carburetor, Friction Clutch Pulley and Water Circulating Pump without extra charge.

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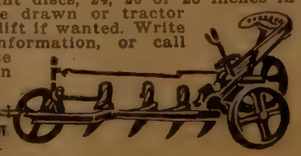
Used everywhere—all styles for orchard and field—one to eight discs, 24, 26 or 28 inches in diameter. Horse drawn or tractor pattern—power lift if wanted. Write for complete information, or call and see these plows when in the City.



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TRACTOR TROUBLES.

Their Prevention and Cure

by W. W. Rainey.

IN summing up the items in keeping a tractor in good order, we find that about 75 per cent of all the work consists of grinding valves or taking up bearings. In a previous article we covered the valve grinding operations quite thoroughly and we will now take up the fitting of bearings and the science of lubrication.

To better understand how and why a bearing must be fitted we must have a knowledge of how a bearing is lubricated. In the first place, friction on the surfaces of shaft and bearing is the cause of all wear. Then we use oil upon these surfaces to eliminate the friction. Why? On account of the degree of heat under which a motor works it is very difficult to lubricate. Not only the cylinders but the connecting rod bearings and the main bearings as well run under a very high temperature, the heat coming from the motor cylinders. The higher the temperature of the lubricant the less efficient it is, on account of being thinner.

In order to lubricate a bearing thoroughly one must use ingredients that will keep the two surfaces from touching. The man who invented the ball bearing was a lubrication specialist. He discovered that oil was composed of small particles of carbon and other substances, the shape of which was round and indestructable, and that if oil were placed between the two surfaces of a bearing the particles would roll between the two surfaces, keeping them apart and thus preventing wear and heat.

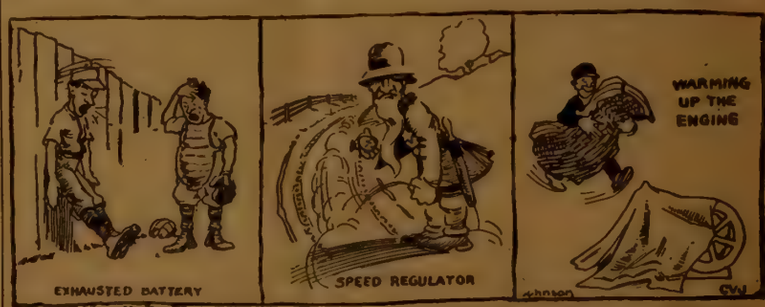
An Illustration

We may take a piece of hardened steel shafting and polish it as brightly as possible, yet it is still rough. If observed under a microscope, it will resemble a file. Now if we take two pieces of metal in this condition and rub them together under pressure, the tiny particles will interlock with each other and be torn out, causing the surfaces to cut away and wear very rapidly. Hence the necessity for lubrication. Therefore, bear in mind that the lubricating properties in the oil you use simply roll between the two surfaces of the bearing, keeping them apart. Then comes the question of how best to fit up a bearing in order to get the most efficiency out of the oil.

For an example of lubrication we will turn to nature. Most of us have probably seen snow and even walked in it and enjoyed sleighing and coasting. But who ever saw a sleigh runner made like Illustration No. 1, with a square front end? A sleigh runner must be made with the front end curved up, as in Illustration No. 2, in order to keep the snow from being pushed out of the way and the runners in contact with the ground. If the runner does come into contact with the ground there will result friction and heat and the sleigh will probably be ten times as difficult to draw. The critical point in the sleigh runner is the one at which it first starts to bend. This bend should start very gradually from the ground upwards; then after it extends a little way from the ground it can come up more abruptly without affecting the running of the sleigh. In this way the snow is packed gradually under the runner and will not be pushed out of the way.

Applied to Lubrication

Now this is exactly the manner in which the oil acts in a bearing. Before the oil gets between the two surfaces it will run in any direction or can be pushed out of the way, but if the two surfaces are so shaped that the soil will gradually be drawn in between them after the weight of the bearing is being supported by the oil it is practically impossible for the oil to get out until it has passed entirely through the bearing and come out on the other side. Therefore, great care must be taken in preparing a bearing for real service. The point at which the oil is introduced must be scraped back to give it a "sleigh runner effect," so that the oil may easily be drawn in between the two surfaces of the bearing.

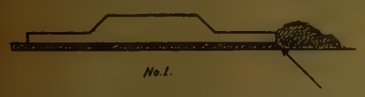


Cartoon Courtesy International Harvester Co.

The proper fitting of bearings is such an important factor in successful operation of a tractor that it must be watched carefully. In the first place, the connecting rod bearings will need more attention than the main bearings, owing to the fact that the connecting rod bearing is the most overworked bearing in the motor. It takes the same thrust upon it at the time of the explosion of the charge behind the piston as all the main bearings, and their surface aggregates several times that of the connecting rod bearings. If you are fitting in a connecting rod bearing, which has an interchangeable, babbit-lined brass bearing, be sure to see that the bearing is fitted tightly into the connecting rod and the connecting rod cap. Then if the ends of the bearings protrude a little beyond the ends of the connecting rod or the cap, take a heavy file and file down until flush. This is done so that the thin metal shims can extend between the ends of the connecting rod and its cap and at the same time between the ends of the bearing proper, and keep it from turning. In fitting shims between the halves of the bearings be sure that the shims do not extend through so far that their edges will scrape the surface of the shaft, as this will

scrape the oil off and not allow it to travel around the bearing.

Next, scrape away the edge of the bearing in order to give it that "sleigh runner effect" so that the oil can enter easily between it and the shaft. Then cover the bearing surface on the crankshaft with a light film of oil and clamp the bearing onto the shaft snugly, but so that it can be worked



No. 1.

back and forth with the hand. If available, a little "Prussian Blue" or "Printers' Ink" (which can be purchased at a first class hardware store) will more readily show up the high spots on the bearing after you have worked it back and forth a few times.

Then take the bearing apart and with a bearing scraper scrape it lightly where the high spots show and repeat this operation until the bearing shows a three-quarter full "seat" all around the shaft. You are now ready to connect the rod to the crankshaft "for keeps." And be sure to have enough shims between the halves of the bearing so that the bolts may be drawn up as tightly as possible and yet do not draw the bearing so tight that it is impossible to crank the motor. However, don't leave the bearing loose.

An Important Precaution

In taking up old bearings, be sure to notice the oil groove in them, and if the bearing is sufficiently worn so that the oil groove has a sharp corner on it, scrape it to a gradual sloping edge, the same as the upper edge of the bearing; otherwise the oil will stay right in the groove, and will not come out into the bearing surfaces.

In fitting main bearings, it is important to remember that in a four-cylinder, vertical type of motor with a three-bearing crankshaft, the center bearing necessarily receives more abuse than the two end bearings, due to the fact that it has to take the brunt of the force of two pistons, one

No. 2.

on each side of it, while the end bearings only have one piston shooting directly by them. As a result, the center bearings usually wear more than the two end ones.

The Correct Way

The proper way to take up the main bearings is to take the motor out and lay the crankshaft in the bearings on the motor block. Then, after "blueing" the crankshaft bearing surface, turn the shaft over by hand while holding it down firmly in the two end bearings. Then if there is no indication of a good contact against the center bearing, scrape the two end bearings down until the shaft rests firmly on the center bearing. Then fit on the bearing caps and shim them properly. The result will be a lasting job.

Most up-to-date tractor motors are equipped with interchangeable bearings in the crankshaft bearings as well as the connecting rod bearings, so that it is a single matter to put in a new one. It is a much more simple job than in the old type of motor, when it was necessary to pour a new bearing in the block in case of accident.

Also some of the latest, improved type of tractors have adjustable main bearings which can, in a few minutes, be adjusted from outside the motor.

Allen Water Ballast Tractor

The Real Agricultural Machine Gun

Light—Powerful—Durable.

A Simple Economical Three-Plow Tractor

Community Manufacturing Co.

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Cletrac

TANK-TYPE TRACTOR

(Formerly known as the "Cleveland Tractor")

Pushing a wheelbarrow through soft soil is almost an impossible job. The wheel sinks in and gets stuck.

Lay a track of boards over the ground and you can roll along easily enough.

It runs on tracks as a wheelbarrow runs on a plank

TRY to push a loaded wheelbarrow through soft plowed ground. You have to exert every ounce of your strength. The wheel sinks in deeper and deeper and you finally get "stuck" altogether and have to take off your load.

But lay a plank over the *same* soft ground and you can roll the *same* wheelbarrow over it with the *same* load—*but with only a fraction of the effort. It was the plank that made the difference.* Its broad flat surface *distributed* the weight of the load so that there was very little pressure at any one point.

And right there you have the principle back of the Cletrac Tank-Type Tractor. It runs on broad flat tracks in much the same way as the wheelbarrow runs on the plank. No power is wasted. You can pull a bigger load. Fuel and oil go further. And *more* work can be done in *less* time—at *less* cost.

Ideal for Orchard Work

The Cletrac is compact, powerful, easy to operate, can be turned in a 12-foot circle, and performs practically all kinds of work formerly done with horses or mules, and does it faster and better and cheaper. On account of its compactness and short turning radius it's ideal for orchard work.

Order your Cletrac now. There is plenty of work for the Cletrac to do, like getting out wood, hauling logs, grinding feed, breaking roads, hauling manure, etc., during the winter months and when Spring work comes along you will be fully acquainted with your Cletrac.

We have an interesting 32-page book entitled "Selecting Your Tractor" that will be sent free upon request. It discusses tractor farming problems on a "brass tack" basis. *Write for your copy today.*

The Cleveland Tractor Co.

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The largest producers of tank-type tractors in the world

Citrus Growing in California

A 5-16 of an acre plot of Orange Trees at Corona, fertilized with

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100 lbs. of Nitrate of Soda in this case added a rate of profit to the grower's income of $101.52 per acre.

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The Ottawa Log Saw does the work of ten men. Makes wood sawing easy and profitable. When not sawing wood use for pumping, feed grinding, etc. Simple, economical, durable. Thousands in use. Fully guaranteed; 30 days trial. Write at once for Free book and low price.
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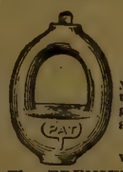
THE PREMIER BURNER

How much wood would a wood-chuck chuck if a wood-chuck would chuck wood?



This is a foolish question, leading to a serious one—which is: Can you afford to gather or buy wood and then cut it to proper size, to be used for heating and cooking, when a Premier (generation a wholesome gas from kerosene [common coal oil]) will give you a cleaner fire at a cost of about 2 cents per hour.

Take your pencil and figure your time's worth per hour in comparison with the operating cost of the Premier. The results will be startling. The PREMIER is reasonably priced, and you soon save enough from your usual fuel outlay to pay for it.

$10.00—for heaters
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We make a specialty of handling wool on consignment. Would advise you to ship us all you have on hand immediately. References: Bank of Italy, San Francisco.

Guarantee—*We guarantee Hanes Underwear absolutely—every thread, stitch and button. We guarantee to return your money or give you a new garment if any seam breaks.*

ELASTIC KNIT UNDERWEAR

Hanes gives wear-service that will exceed any man's expectations!

GET the big, *extra*-long-service features of Hanes winter men's Union Suits and Shirts and Drawers fixed in your mind! Go over the *extra*-wear-points brought out in the diagram circles shown in the Union Suit above—*guaranteed* unbreakable seams; *guaranteed* tailored collarette that cannot gap; *guaranteed* elastic knit wrists and ankles; *guaranteed* closed crotch; *guaranteed* pearl buttons sewed on to stay; *guaranteed* buttonholes that last as long as the garment!

If comfort, warmth, wear and economy mean much to you in winter underwear, then buy "Hanes"! *Every thread, stitch and button is guaranteed!* You should immediately check up your dealer and get a supply.

Hanes winter weight Union Suits are standard throughout America—*standard* because they exceed in real worth any underwear you ever bought at the price!

Your confidence in Hanes Underwear should be based on the fact that every process of manufacture from raw long-staple cotton to the perfected garment is *under direct Hanes supervision in Hanes factories!*

Your choice of Union Suits or Shirts and Drawers is a matter of personal preference.

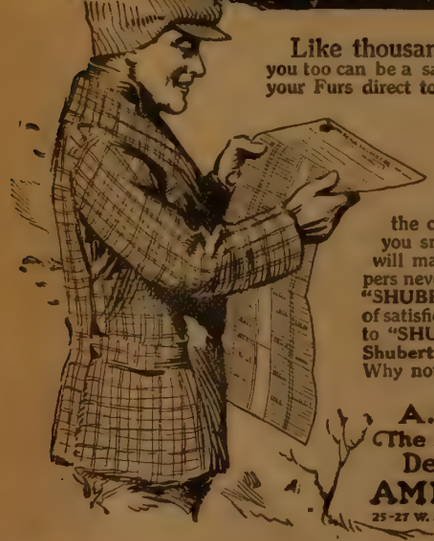
Union Suits for Boys All the quality, extra features and perfect workmanship that make Hanes men's Union Suits so universally popular *go right into Hanes Union Suits for Boys!* These staunch Union Suits stand up against the stiffest wear-service and wash service. Made in sizes to meet ages between 2 and 16 years. Two- to four-year sizes have the drop seat.

If your dealer cannot supply you, write us direct

P. H. HANES KNITTING CO., Winston-Salem, N. C. New York Office, 366 Broadway

Warning to the Trade—*Any garment offered as Hanes is a substitute unless it bears the "Hanes" label.*

YOU TOO CAN BE A SATISFIED FUR SHIPPER



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It's up to you to get the full market value for every skin you ship. Don't be misled by high quotations. It's not the prices quoted in a price list that count—it's the amount of the check you receive that either makes you smile or swear. "SHUBERT" checks will make you smile. That's why Fur shippers never change after they have once given "SHUBERT" a trial. Join the happy crowd of satisfied Fur shippers. Ship your Furs direct to "SHUBERT." *You take no risk.* "The Shubert Guarantee" protects you absolutely. Why not give "SHUBERT" a trial today?

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RABBITS $6,000 YEARLY. Raise Furbearing Rabbits for us in your back yard, spare time. We furnish stock and pay $3.50 to $7.50 each for all you raise. SUNSET FUR CO., 507 Lankershim Bldg., Los Angeles, Cal.

DR. J. F. FARMER
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Toggenburg Saanens
crossed for five generations produced De Lait strain goats milking 1 to 2 years.

How to Make Money Trapping

By Albert J. Mason

A "SKIN GAME" may be profitable as well as legitimate. For example, there is the fascinating "game" of trapping.

Never before were prospects so bright for big returns to amateur trappers, and many a rancher or country boy will reap a fur harvest this year. Dame Fashion has decreed furs, and apparently milady has the money to pay for them.

A knowledge of the fur-bearing animals found in his vicinity and how to catch them and treat their pelts reveals a source of income often overlooked by the average rancher. And for the boy in the country nothing offers a more delightful diversion than a trapping expedition, particularly if it entails a money reward. Where the farm itself affords little opportunity for trapping, an accessible stream or wooded tract is generally to be found nearby where fur-bearing animals can be caught. While the fur resources of the country have been diminishing steadily, prices have been rising. The war also has been an important factor in this upward trend.

Wait Until Fur Is Right

The person about to engage in pelt gathering must understand at the outset the necessity of postponing trapping until the animals' fur is at its best. The pelt of a mink, for example, killed in September, might not be worth more than 50 cents, whereas if the same animal were killed in November or December, its pelt might bring $10. Speaking generally, trapping should not begin until late November, or December—for most sections of the country. Two principal exceptions to the rule are the muskrat and beaver, whose fur is not at its best until February or March in most districts.

Each trapper must bear in mind that the size and condition of the individual pelt, as well as other factors, will have much to do with the sum it will bring. There are a number of grades for each class of furs.

Skunk Pelts Valuable

California abounds with skunks, from the little, spotted "civet skunks" to the big striped fellows. And the price varies greatly, from 15 cents for a small spotted skin to as much as $8.50 for a prime, large striped specimen of good markings.

Below are listed the principal fur-bearing animals taken in California from north to south and, according to A. E. Pendl, manager of Colburn's Taxidermy Studio in Los Angeles, who supplied the information, prices will be higher this year than ever before.

In addition to the skunks, of which there are technically four varieties and five grades, California trappers will "cash in on" the following furs this year, and prices, Mr. Pendl states, will vary according to the figures given

Kinds and Prices

Raccoon (5 grades), 50 cents to $7.25; **mink**, 30 cents to $11; **muskrat**, 10 cents to $3.50; **coyote**, 60 cents to $14; **black fox** (very rare but sometimes trapped in California, especially in vicinity of Mt. Whitney), up to $700; **silver fox**, also rare and very high-priced; **red fox**, $10 to $32; **gray fox**, 80 cents to $6.25; **cross fox**, to $100; **lynx**, $17 to $58; **lynx-cat**, $3 to $17; **ordinary bob-cat**, 25 cents to $3; **Martin**, $11 to $75; **fisher**, $24 to $120; **badger**, 50 cents to $4; **otter**, $2.50 to $25; **beaver** (can be trapped only with special permit), $22; **bear** (black and brown), $20 to $30; **mountain lion**, $5 (also $30 bounty).

Even Moles Profitable

An example of returns that can be secured from fur resources long overlooked is found in the fact that the people of Oregon netted approximately $50,000 from mole skins last year, following trapping demonstrations by representatives of the Biological Survey of the United States Department of Agriculture. The demonstrators showed that while millions of European mole skins were used by fur manufacturers in America before the war, the skins of some American moles, especially the large, common variety of Western Washington and Oregon, are larger and have better texture than those from Europe.

Farmers' Bulletin 832, published by the United States Department of Agriculture, describes the best kinds of mole traps and how to set them, and gives other information. The methods discussed are especially adapted to the Pacific Coast States.

If the farmer who temporarily turns trapper is to realize the best prices for pelts, he must learn the proper methods of handling them. Most skins should be "cased" for the market. A cased skin is one removed from the carcass after slitting the hind legs, but not the belly of the animal, thereby leaving a tubular-shaped pelt. The skin is left with the fur turned in, and dried on a stretcher made of thin board sharpened to a point, or of heavy galvanized wire.

The Biological Survey of the U. S. Department of Agriculture furnishes on application information regarding the trapping of fur-bearing animals, laws relating to the subject, and the preparation of pelts. It also supplies inquirers with lists of buyers for various kinds of pelts. Address the main office of this department, Washington, D. C.

One of the best sources of information for the trapper is offered by the fur dealers, many of whom also sell trapping supplies, and a number of whom advertise in Orchard and Farm. These companies distribute catalogs and circulars describing the different animals and their habits, and telling how to trap them and prepare their skins for shipment. To possess a number of these catalogs is to have a veritable library of text-books on the subject of trapping, and frequently each will present information not contained in the others.

Do not attempt to trap "for commercial purposes" without a license. You can procure a special trapping permit from the State Fish and Game Commission, Sacramento, which has branch offices throughout the State. This costs $1 for a resident (resident alien, $2). The regular hunting license for game does not cover trapping of predatory animals. No special permit is required to trap on the forest reserves except on the "game refuges," when the permit must be okeh'd by a forest officer. In fact, trapping on the refuges is not allowed except in the case of those living within or adjacent to the refuges. Anyone intending to trap within the limits of the national forests should inform himself as to the location of these preserves. Next month Orchard and Farm will publish more valuable information for the amateur trapper.

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Does Neatness Pay?

I RECENTLY purchased a somewhat dilapidated highway ranch of ten acres. Careful inspection has convinced me that its failure to pay in the past had been due to poor management rather than lack of fertility or other natural advantages. Asked whether he had not been able to develop a good roadside business in the sale of fruit and vegetables to passing travelers, the former owner replied that this had never paid.

I felt sure that there were many possible customers among the passers-by and determined to try to build up this trade. First I placed a large, neat sign board near my gate, on which I posted, in large, plain white letters, the day's offerings. About 200 yards each side of the gate I placed a smaller sign with the name of the farm, "Crestview Ranch," at the top and the words "See bulletin board at gate for bargains in good things to eat."

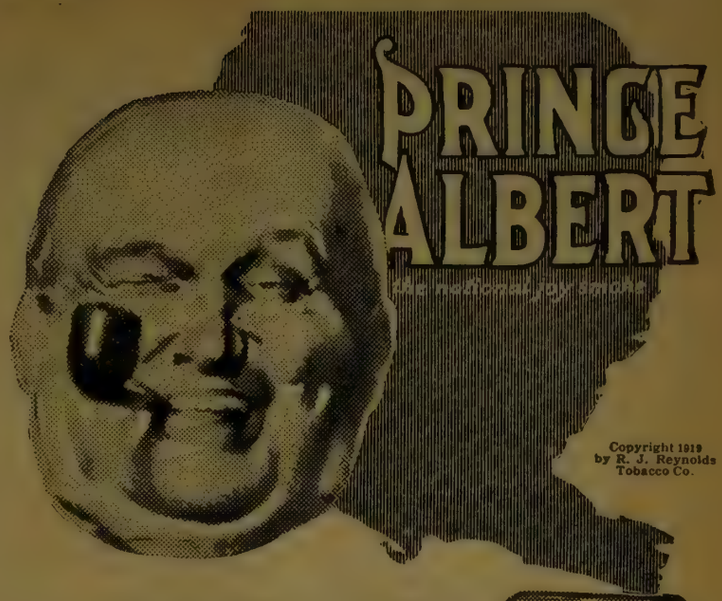
Now I set out to improve the appearance of the part of my place which bordered on the road. Two dilapidated gateposts were destroyed and removed and I erected neat posts of stone with cement coping and electric lights. The fence and hedge marking the boundary line were both gone over. When new posts had been set and the wire restrung on the fence and when the hedge had been neatly trimmed, business began to pick up right along. Later I graveled the roadway and walk leading from the highway, and erected an attractive gate.

The more I improved the looks of my entrance and "front line" the better the business I enjoyed and within six months after taking over the place, I sold more produce direct to passing motorists than any other farmer in that entire district.—George Gates.

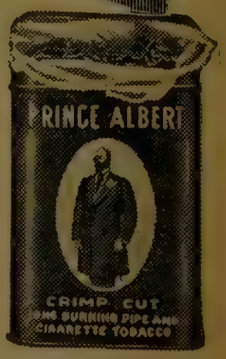
No Gate to Open

This rancher drives his car over the top of the fence without stopping. Yet, no livestock can cross, as the "bridge" consists only of two troughs for the wheels.

To rid land of Bermuda grass or salt grass, plant Napier Fodder next spring or fall. We have found that it will clean up badly-infested land, at the same time furnishing large quantities of feed. It is easily grown and eradicated.—Mrs. F. E. Galbreath, Pixley, Cal.



IF you haven't rung-in on the joys of a jimmy pipe with Prince Albert for packing you certainly want to get introduced inside the next hour! Talk about a pal-party! Why, it's like having a pass on a park merry-go-round early in June!



For, Prince Albert has brought pipes into their own—led *three men* to the utmost tobacco happiness where *one man* smoked a pipe before! P. A. has blazed the trail for thousands who figured they would have to do "Kitchen Police" on pipe smokes the rest of their lives! Thousands more have taken the tip to roll their own with Prince Albert!

So, climb into the P. A. pipe or makin's cigarette pastures and have a session! You'll soon get wise, all right, that Prince Albert never did bite the touchiest tongue in your township—and, it's a brace of aces against a two-spot that it never will fuss yours! Read on the reverse side of every Prince Albert package that P. A. is made by our exclusive process that *cuts out bite and parch!*

Give Prince Albert the speed-o taste-test and tongue-test *if you want to sing-smoke-songs-at-sunrise!*

Toppy red bags, tidy red tins, handsome pound and half-pound tin humidors—and—that classy, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.

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Miscellaneous Mention—Weldon

The House Fly Menace

IN the November number of Orchard and Farm there appeared a short article by the writer on the unsanitary condition of the fruit stand, unprotected from flies. A short life history of the pest is given herewith in order that its true character may be better understood.

The common house fly is sometimes called the "typhoid fly" because of the fact that epidemics of this disease may occur as a result of germs carried by it. Not only are typhoid germs carried on the footpads of the fly but also in the alimentary canal, from whence they are voided, in an active condition, in the excreta.

Flies breed abundantly in horse manure, which seems to be the favorite food of the larvae. Other filth of an organic nature may also serve as a breeding place, and the cow corral or open privy is frequently chosen. A single female fly deposits from 100 to 150 eggs. These hatch in a few days and the larvae (or maggots as they are called) feed in the manure, where pupation and transformation to the adult stage take place.

Immediately upon emerging, the adults may enter our houses and alight upon the butter, sugar or meat. Fruit which is over-ripe or which is beginning to decay is a favorite food. Excrementitious material of every nature serves as food, and not only the germs of typhoid may be gathered because of this fact, but also those of tuberculosis, anthrax and other serious germ diseases.

Control of the house fly menace is therefore simply a question of eliminating, or screening from them, material in which they breed. Manure piles, if screend so that the adults cannot have access, will not be a menace.

A well-organized campaign of education in a city will go more toward the control of this pest than anything else.

Farmers are too often careless in this respect. For their own personal welfare, therefore, as well as from a business standpoint, because of the contamination of fruit, they should interest themselves in destruction of flies.

Alfalfa Seed Growing

Certain sections of California offer unusual opportunities for the growing of alfalfa seed. It is possible under existing conditions in these districts, where there is plenty of water, to cut at least three good crops of hay and mature a crop of seed afterward.

Good alfalfa seed is now very scarce and commands a high price on the market. Farmers in the arid portions of the State, who have a sufficient water supply and who find conditions suitable for the growing of alfalfa, might do well to investigate seed growing possibilities.

The following authentic record of alfalfa seed and hay production on the desert comes from Adelanto, a little settlement eight miles west of Victorville, near which some wonderful development work is being carried on.

A patch of a few acres was sown to alfalfa in September, 1918. During the summer of 1919 three cuttings of hay were harvested and the fourth crop was left for seed. The seed matured in good condition, and a fairly good yield was harvested in time for a fourth crop of hay to develop during the season. This crop of hay was seen by the writer on November 1, at which time it looked as though it would make sufficient growth for another cutting. The alfalfa was sown in rows, which is in accord with advanced ideas on the subject of seed production.

It would be difficult for Easterners to believe this story, when they ordinarily expect little hay from a one-year-old stand of alfalfa, and when seed, if grown at all, would be at the expense of hay for the season.

Detecting Red Spider Eggs

There are at least two species of red spider, commonly known as the Brown Mite and the Citrus Mite, which spends the winter season in the egg stage on deciduous trees such as almond, peach, pear, apple and plum.

When trees are being pruned the presence of mite eggs can often be detected. They appear as little, red globular objects, each about the size of the head of a pin, and are usually deposited on roughened bark near the base of a limb or surrounding buds, pruning wounds, etc.

When they are detected in large numbers, the infested trees should be sprayed either with lime sulphur in the early spring as the buds are swelling or with a crude or distillate oil emulsion. Lime sulphur is a sure remedy and because of its general insecticidal and fungicidal value should be applied where the eggs are numerous.

Facing Fruit Packs

That facing of California fruits both in the fresh and dried states has resulted in better prices in many cases is a well known fact. There can be no valid objection to this practice, providing the same character of fruit is used in the facing layer as that which is used in the lower layers.

Unfortunately, however, advantage has been taken of the practice, and instead of the top layers of fine fruit indicating a superior quality throughout the entire package, it has frequently been used only for "camouflage."

What housewife has not been provoked when beneath a fine layer of beautiful strawberries or dried peaches she found fruit so small and inferior as to be scarcely fit for human consumption! The Orientals have been persistent in this practice, which they have adopted for the purpose of getting rid of cull fruit, which would not sell alone. The public has too long accepted this character of pack, and should now demand that the facing of fruits be discontinued. But if it is necessary to face, there should at least be the same character of fruit throughout the entire container.

It is true that our eyes play a large part in the selection of our food. Things taste better when they are attractively and tastefully prepared. Perhaps when we view the facing question from this angle, we can justify its continuance. The fact remains, however, that it is so easily used for misrepresentation that it is of doubtful value, and it is pleasing to note that such splendid fruit growers' organizations as the "Prune and Apricot Growers' Association" and the "Dried Peach Growers' Association" are discouraging the practice.

Agitation of Spray Liquid

In buying the power sprayers, special attention should be paid to the agitator, which has a very important service to perform within the tank. Certain sprays, such as arsenate of lead, "atomic" and "invisible" sulphur and Bordeaux Mixture, do not go into solution in the water, but small particles are held in suspension.

Likewise, while spraying is going on there is always a tendency for the particles to settle to the bottom. Violent agitation is necessary in order to maintain the best mixture. Since poor results in the control of either insect or fungus pests may be due to nonuniform distribution of the spray particles, this important factor should not be overlooked in the purchase of a sprayer.

The Fruitgrowers' Convention

IT IS significant that, during the fifty-second Convention of Fruit Growers and Farmers, held at Chico, November 16 to 21, as at previous meetings of a similar nature, an extremely important step was taken in its relation to the agricultural production of the State.

A committee was appointed to bring about close affiliation between representatives of all the important producers' co-operative organizations of California for the purpose of bringing pressure to bear upon the Legislature to secure closer consideration of the needs of the food producers. Moreover, it was determined that, through this joint committee, steps would be taken to combat the propaganda, largely based on misunderstanding, now on foot in opposition to the farmers' organizations.

It was apparent to those attending this inspiring meeting of more than 300 delegates, including State and county officials, that the producers are determined to preserve at any cost their right to collective bargaining and to fight to the last ditch for the existence of their co-operative associations.

Distinguished Speakers

Many instructive and enlightening papers were read. Among the speakers were such men as Mayor S. A. Reynolds of Chico, who assailed the Japanese and attacked the policy of toleration which has permitted them to obtain such a foothold; James Mills, widely-known Hamilton City orchardist; George W. Pierce, president California Almond Growers' Exchange; A. E. Sunderland of the California Peach Growers, Inc.; G. Harold Powell, manager California Fruit Growers' Exchange; J. H. Stephens, president Rice Growers' Association; Dr. E. B. Copeland, president Chico Chamber of Commerce; P. M. Teague of Limoniera Rancho; Mrs. Elizabeth Hughes, Assemblywoman, Oroville; Prof. F. T. Bioletti, Dr. Elwood Mead and Dean Van Norman of the university, and other representatives from Berkeley and the University Farm, as well as State and county horticultural officials, and many others. Director Hecke of the State Department of Agriculture was on hand for all gatherings and worked day and night in the interests of the various delegates, addressing many meetings. The conventions of the County Horticultural Officials and the State Nurserymen's Association were held the same week.

One day was spent in touring the wonderful Oroville and Wyandotte olive and citrus districts and inspecting the olive-packing plants. Entertainment was provided by the people or Oroville. The United States Plant Introduction Gardens, near Chico, were visited, as well as the State Land Settlement Colony at Durham.

Successful Entertainment

The banquet given at the Hotel Oaks, Chico, Friday evening, November 14, was one of the brightest and best ever held by any agricultural gathering in the State. More than 225 plates were set, each guest receiving a whole roast duck and the entire menu being made up of Butte County products. Wit, brilliance and progressiveness marked the speeches, while selections furnished by the Sacramento Chamber of Commerce Male Quartet received encore after encore.

Surely no finer representative gathering of the forces of agriculture was ever assembled, and California has reason to feel proud, not only of her food production, but of her producers as well. It is to be hoped that coming gatherings of a similar nature will draw even heavier attendance. Such a week of meetings, conferences and contact with fellow workers is an education in itself, providing new viewpoints and inspiration for all who attend it.

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Three wide planks form the floor of the marker or "creaser," and the pieces which make the furrows are in the nature of runners. A tongue and truck take the pressure off of the first plank. The user rides the planks and runs the outside creaser in the last furrow made during the previous trip.

As pointed out in a previous article in Orchard and Farm, corrugation, when the fall is less than 10 feet to the mile, is highly desirable, tending to save water, prevent baking and produce better soil conditions.
—Wm. L. Trewin, El Centro, Cal.

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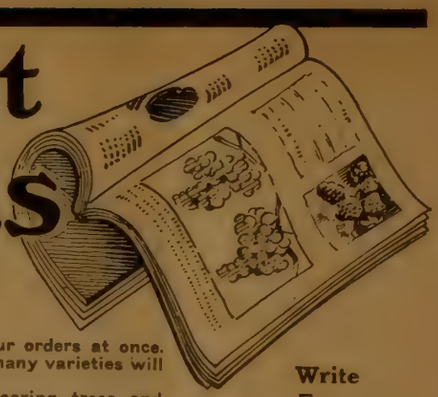

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What About Fig Black Smut?

By Robert W. Hodgson

FOR a number of years growers of White Adriatic figs have experienced losses due to a black discoloration which is found in a certain portion of the crop and which is popularly known among fig packers as "black smut." The proportion of infected figs is much greater in some seasons than in others and has been known to run as high as fifteen per cent, although it generally averages somewhere between three and ten per cent.

With present high prices for figs, growers are naturally even more desirous than ever before of marketing as much of the crop as possible as first quality merchandise. To have losses or 10 to 15 per cent from smut at a base price of 20 cents or better is, of course, infinitely more exasperating than was the case when the base price was nearer 5 cents. A recent survey of Eastern buyers as to methods of improving the quality of the California crop brought out a decided request to eliminate smut if possible. Fig growers are, therefore, clamoring at the present time as never before to have this problem investigated.

Figs vary greatly in the degree to which they exhibit this black discoloration. A certain number of the worst affected ones show it so badly that in picking up the figs they are readily detected and thrown out. A far greater number, however, exhibit it only as a single streak or spot, not particularly noticeable except upon careful inspection. These figs cannot be used for packing fancy gift boxes or in fig cartons and although excellent in quality must be carefully sorted out and discarded for use only in fig paste manufactured for confectionery purposes. The most exasperating feature, however, is that a certain small number of smutted figs which cannot be detected by the external appearance escape observation and go to the consumer as fancy figs. In the competition between home-grown figs and the imported article, growers and packers are particularly desirous that only the best should reach the consumer; to receive complaints from apparently first-class figs is disconcerting to say the least. Figs shipped in bulk suffer heavier losses from black smut because these slightly infected figs cannot be sorted out effectively.

Identity Established

During the 1917 season the writer investigated this trouble in the laboratories of the Division of Citriculture at the State University. Cultures made from a large number of figs of the 1916 and 1917 crop in practically every case disclosed the presence of a common fruit decay—producing fungus, *Sterigtatocystis*. Black smut figs sent to the Division of Plant Pathology have frequently been found infected with the same organism. Several other fungus forms were isolated from the interior of black smut figs, but the uniformity with which *Sterigtatocystis* was obtained indicates that this fungus is the cause of black smut.

As to the time and method of infection very little definite knowledge is at hand. The fig, on account of its high sugar content and peculiar structure is very subject to visitation by numerous small insects which not only carry black smut spores, but ferment-producing organisms as well. It seems probable that those figs which are badly infected with black smut and which show the interior as a black powdery mass are infected while still on the tree. There is good reason to believe, however, that the slightly affected figs which are so hard to detect are contaminated by small beetles crawling into the eyes of the figs after they have fallen to the ground. At this time the fig is rapidly losing water and as the water is lost the per cent of sugar increases to the point where fungus growth is stopped before developing to any extent. In the case of figs which are infected while still on the tree, the higher water content permits the fungus to grow and develop to a much greater extent, even to the "sporulating" stage, which is represented by the fine powdery mass in the interior.

Prevention

In the case of the figs infected while on the ground it would seem that a large part of this infection might be prevented by gathering up the figs more often than is the prevailing practice at the present time. In many cases figs are allowed to remain on the ground for a period of as much as two weeks, which certainly provides a favorable opportunity for infection by small beetles or other insects. It has been demonstrated by fig growers that more frequent picking up of the figs will prevent at least a certain amount of black smut. Certain it is that a better product results.

There is some data to show that certain localities or orchards consistently produce more black smut figs than others in the same district. This fact seems to indicate that the fungus, for some reason, probably of a climatic nature, thrives better in such places and consequently is present in sufficient quantity at the favorable time for infection.

The need for a careful field investigation of this difficulty has been brought to the attention of the authorities. The distribution of the fungus must be established, conditions favoring its growth ascertained, and the time of infection carefully determined. Then we shall be in a better position to work out methods of prevention, eradication, or control.

Silk Production—"The Worm Will Turn"

AT VARIOUS times in the past the humble silk worm has found the limelight in California; visions of a vast home industry have been aroused; great predictions have been forthcoming. Particularly during the P. P. I. E., when the exhibit of the late S. R. Bellamy of Rutherford, Napa County, was awarded a diploma and gold medal, enthusiasts predicted great things for the silk industry in this State.

Muh interest is now being displayed in this revived California industry by groups of investigators in various sections of the State. We are informed that a large number of mulberry trees (or bushes, as they are sometimes called) have recently been set out in Butte County, where plans are being made to engage in the business on a large scale. Already the work has progressed far enough to bring up for discussion the topic of tariff protection. California, being the scene of development of so many new industries which compete with importations, is naturally interested in many different angles of this tariff question. If the silk industry becomes of sufficient importance to require protective legislation, no doubt it will be accorded. But there can be no sound basis for such legislation until comparative costs of production are available or until production reaches a

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quantity sufficient to demand it, economists declare.

Orchard and Farm is in receipt of an interesting communication from Mrs. Bellamy, now in San Francisco, who tells something of her husband's accomplishments and the possibilities that he visualized as the result of his experiments.

In 1905, she states, Mr. Bellamy secured about 40,000 silk worms. An extensive planting of mulberry trees, upon which the worms feed exclusively, was made. Samples of the silk produced were pronounced equal to any to be found anywhere in the world.

A Valuable Industry?

Mrs. Bellamy believes that the only reason "silk farming" has not developed as rapidly as anticipated is because it has never been properly understood. Of course, other factors have combined to deter the development of the industry. However, our correspondent expresses surprise that men will go into the desert digging for gold and seek another and still another mine when the ore gives out, while a veritable "gold mine" that will never "give out" exists in potential silk culture.

The mulberry trees, she points out, although not widely grown in this country, are ornamental as well as useful. The berries are superior for making jam and jelly. If properly pruned the trees will thrive under favorable conditions, for as much as 70 years. An acre of good soil, it is contended, should produce an average of $300 worth of cocoons.

It is unnecessary, she states, to obtain stock from a nursery, as seed may be planted in boxes and set out in rows at the proper spaces. Some growers advocate setting the trees only six or eight feet apart. It is possible to produce vegetables between the rows and thus increase the income, it is pointed out.

Experts have asserted that the mulberry will thrive better in California than in almost any other part of the world, the growing season in some sections of the State being from February to November.

The following verses were dedicated to the silk worm by Mr. Bellamy and attracted much attention at the time they were written:

The Silk Worm's Will

On a plain rush bundle a silk worm lay,
When a proud young princess came that way.
This haughty child of a human king
Threw a sidelong glance at the humble thing,
As it took, with silent gratitude,
From the mulberry leaf its simple food.

The maiden shrank in deep disgust
From the sight of her sister child-of-dust,
Declaring she could never see
Why a reptile form like that must be,
And she did not have nerves so firm
As to calmly look at a crawling worm.

With much forbearance, the silk worm took
The taunting words and the spurning look.
A stranger to such selfish pride,
With no distrust from aught beside,
It lived of simple peace possessed,
Not always found in the human breast.

It only wished that this abuse
Might take some form to be of use
To the haughty child of lordly man.
And so the silk worm laid a plan,
To teach a lesson and make it plain
That God made not the worm in vain.

A plan inspired by thoughts so high,
That it even meant the worm must die.
"No more," it said, "will I drink or eat
"But I will weave a winding sheet
"To hide me from the sun's clear light
"And spare the Princess' wounded sight.

"In secret then, as my end draws nigh,
"I'll toil for her, and when I die,
"I will leave behind as a farewell boon
"To the proud young girl, my whole cocoon.
"And it shall furnish sheerest lace,
"To make a veil for her scornful face.

"And as she calmly draws her breath
"Through the very threads that have caused my death—
"When she learns that she has nerves so firm
"She can wear the shroud of a crawling worm,
"May she bear in mind that she looks, with pride,
"Through the winding sheet where the silk worm died."

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The End of a Long, Long Trail

By H. G. Tinsley

THE vast tracts of land held by big corporations in the interior valleys of California for the past fifty years are being subdivided, and no doubt will soon all be sold off in small divisions.

Thus a question that has been a vital public issue in the San Joaquin Valley and has concerned the growth of every community from Stockton to the Tehachapis, is finally coming to solution. For thirty years the problems presented by the enormous land holdings in Kern, Kings, Stanislaus, Merced and Fresno counties in the San Joaquin, as well as in Monterey, Santa Clara and San Luis Obispo counties, has been discussed in public prints.

Altogether, corporate land holdings in California aggregate nearly 4,000,000 acres, or 5930 square miles. Among the great land-holding concerns are the Miller & Lux Company, the Jacks estate of Monterey, the Crocker-Hoffman Company, the Kern County Land Company, the Olcesse estate, the Planer Ranch Company and the Stanislaus Land Corporation.

These concerns have steadfastly refused to sell, but now, with the announcement of a subdivision of the whole Miller & Lux holdings, the beginning of a campaign for colonization by the Kern County Land Company and the selling off of the Stanislaus Corporation's 420,000 acres in 100-acre ranches, it is conceded that a new era of small farmers, involving settlement of fully 200,000 agricultural families has dawned in the San Joaquin. In place of boundless stretches of grazing lands there soon will be orchards, dairy and cereal farms, cotton fields and vineyards.

The Miller & Lux Company, said to be by far the largest landed proprietors on the Pacific Coast, if not in the United States, owns over three-fourths of a million acres in California. Its possessions are reputed to cover 1528 square miles in the San Joaquin Valley alone, extending principally from the Stanislaus River southward to the Tehachapi Mountains and including great stretches of grazing acreage in the coast counties of Monterey, Santa Clara and San Luis Obispo. It has been estimated that these land holdings, stretched in a string of single acres, would reach around the globe thirty-nine times. Miller and Lux own acreage equal to almost the whole area of the State of Delaware and one-third of Massachuetts.

Along with the information that parts of the Miller and Lux lands already have been disposed of, comes the news of the decision of other big concerns in the San Joaquin Valley also to subdivide and dispose of their acreage in small farms and orchards. The Kern County Land Company, holding 270,000 acres, is said already to have formulated a definite plan for subdivision of practically its entire property.

These big land holdings have been a bone of contention between the owners and the urban residents for longer than a generation. A local political issue has been made in every county in the valley—and in Monterey and other coast counties—upon the fact that the so-called "land barons" have steadfastly refused to part with their holdings to small farmers. In spite of continual denunciation and repeated attacks, the big land owners have doggedly declined to part with any of their properties.

How Miller and Lux Started

The acquirement of the Miller and Lux holdings dates back over half a century. Henry Miller and Fred Lux were German butchers in San Francisco in the early 60's. They had come to the State in the rush of gold seekers in the 50's. They secured very profitable contracts with the Government to supply meats for the army posts in Central California and for the navy, and also made a fortune in furnishing the Central Pacific Railroad construction camps with meat; in addition, they enjoyed a big city trade.

In butchering, it was a short step to the production end of the beef business, and through dealing in cattle, they came to know the value of land. In 1863, Miller and Lux bought 60,000 acres in the Sacramento Valley for a mere song. In 1869, when the Central Pacific was finished to San Francisco, they sold at a profit of $200,000. This was but one of their big land operations; from that time on their holdings rapidly increased.

Henry Miller, surviving member of the firm, declared that never an inch of Miller and Lux's acreage would be sold, no matter how tempting the offer.

Once, when a committee of Gilroy men went to Miller, in his old age, and urged him to sell a little of his land for sugar beet growing, he replied: "I shall never let an acre go. Lux and I found years ago that no better investment could be made by us than the purchase of California land. It cannot be stolen; it won't disappear; it can't be manipulated, and it will always be in demand. If my children will follow out our policy, they will never come to want."

Henry Miller, survivor of the firm of Miller & Lux, died in San Francisco, aged 87, a few years ago, leaving intact this vast empire of agricultural lands. His only heirs are his daughter, Mrs. Nellie Miller Nickel and her family. And now, it is announced, the Nickel family will close out all the Miller & Lux holdings. It will take years to accomplish this. Acreage that cost 75 cents and $1 an acre in the early 70's, is now in demand at $150, $200 and $300 an acre.

James Ogden, manager for the Kern County Miller & Lux properties, said the other day: "The fact is that Mrs. Nickel and her family have wearied of the publicity and the ceaseless litigation that are theirs by reason of their vast estate. They seek a retired life away from the care of almost a million acres of farming land. The death of a son in the family a few years ago, while among the company's cattle, was a severe blow. Also, the suit brought by the State of California against the Miller heirs for $6,000,000 inheritance tax was distressing and has compelled a disposition of part of the possessions. Already a tract of land in the vicinity of Gilroy, that cost Miller & Lux $14,000 in 1873, has been sold for $860,000."

I Disagree With Van Norman

By William Corodon Lewis

I HAVE just read, with much interest, the article in the November issue of Orchard and Farm on our industrial problems, by Dean Van Norman. It is a thoughtful, well-written article, but he overlooks or ignores some important points. He, like most other students of economy, seems to assume that capital and capitalist are synonymous terms, or that we cannot have capital without the capitalist. Yet, there are hundreds of millions of capital invested in the postoffice business, with no capitalists drawing interest or dividends on any part of it. Does any one know of any good reason why there should be? And is it not true that all of the people have more capital than part of the people?

When the Government found it necessary to raise several billions of dollars, it realized that the capitalists could not furnish it, so it appealed to all of the people and they raised it with scarcely an effort.

In order to be more clearly understood, I will speak of capital in the sense that the term is ordinarily used. There are just two ways in which business can be conducted. Under private management, or under public management. No business can manage itself and there are only the two kinds. Under private management, the chief, if not the sole aim, is private profits. Men are not in business for their health, not to benefit others, but to benefit themselves, and human nature being what it is, most of them, at least, are going to make all the profits they can, regardless of others.

Under public management, there are no private profits to be considered. The only thing to be considered is to give all of the people the best possible service at the least possible cost.

That is the principle on which the postoffice business is run. There was a time when it was a private monopoly and it cost 25 cents to send a letter. Would anyone want to turn it over to a private monopoly now?

It is strange that so many writers keep filing away at that old, worn-out saw: "The interests of capital and labor are identical." They are identical in just this sense: They are both fighting for the same thing. The professor's "variable reward" is but another name for net profits, and, as he says, capital has always appropriated all of it and considers that it has an inalienable right to do so.

Labor has concluded that it has some inalienable rights also. It demands at least a fair share of the profits, and it realizes its power to enforce its demands, as it never has before. Capital refuses to yield, and so the merry war is on, and it is bound to continue until one of three things happens.

Either capital will win a decisive victory, in which case labor will be reduced to practical serfdom and the rest of us will be but little better off; or, labor will win, in which case we will have a worse despotism than that of private monopoly. (Labor never knows when it has enough or when to let well enough alone. It will be Russia over again); or, the Government will be forced, in self-defense, to abolish the whole system of private monopoly, and take over all of the industries and run them for public service, instead of private profit.

You are horrified, of course, at the mere suggestion of such a possibility. You think that one who will seriously suggest it is either a fool or a criminal. Well, the writer clearly remembers when the majority of the people of the North were ready to admit that there were serious defects and abuses in slavery. And if anyone was able to suggest some plan to get rid of the bad effects of slavery without touching the cause, they were ready to listen to him; but if anyone suggested that the only way to get rid of the effects was to destroy the cause, they were up in arms at once. They considered such a one a dangerous lunatic, who should be locked up in prison, or a criminal who should be hanged.

And some of them were hanged, in Northern cities by Northern mobs. Just the same, slavery was abolished, but a bloody civil war was required to do it. And it was necessary to attack the cause.

The article by Dean Van Norman of the University Farm School, featured on Page 5 of our November issue, attracted a great deal of interest and comment. Our subscriber, who contributes this letter, apparently is very pessimistic as to the outlook and sees only a faint ray of hope for the country. Part of it offers an example of how NOT to think. If we all think there is no hope and the country is going to the bow-wows, it will very soon go there. However, the condition that now confronts the Nation should be given the serious consideration of every farmer. We agree with Mr. Lewis in one thing, at least; it may be up to the farmers to save the situation. But we don't agree with him that it is hopeless.—The Editor.

I am a farmer, not identified with either faction of capital or labor, and I say to you now, there can be no peace and no prosperity for the mass of the American people until the cause of our present industrial war is abolished, and there are only two ways in which that can be done. Either the Government must abolish private monopoly, as it did slavery, and take over the industries or we shall have sovietism. We can take our choice.

The farmers of North Dakota have banded together and taken control of the State Government. That is well as far as it goes, but it is class rule and rule by any one class always ends in abuse of power. There can be no real democracy until all classes participate in the government. Up to now, capital has ruled, and we see the result. Labor is now determined to rule, and we know in advance what the result will be.

We farmers hold the balance of power, and if we would use it promptly and wisely, it is possible that the situation could yet be saved; but not probable, as the war is already well under way and getting worse every day.

To look to the old political parties is worse than folly. They are owned and controlled by private monopoly; naturally so, since they look to the monopolies for their campaign contributions and the monopolies are not going to put up the money unless they can control the policies of the parties.

If there were time, the best plan would seem to be for the farmers' unions and labor unions to join together and take control of the State and National Governments, which they could do with perfect ease. The farmers could hold the labor unions to a safe and sane course. I am afraid there is not time, but that seems to be the only road that leads to safety.

(Our correspondent's suggestion appears to be impractical, inasmuch as the National Grange, representing over half a million farmers, recently declined an invitation from Samuel Gompers to discuss affiliation.—Ed.)

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Write for Our Illustrated Catalogue
A Real Practical Planters' Guide.

Our Catalogue lists and describes everything we grow—hundreds of tried varieties. Gives many useful hints on planting, pruning, irrigation and other important details connected with successful fruit growing. This Catalogue will be found interesting to both the beginner and the professional horticulturist. It is sent free on request.

Fancher Creek Nurseries
702 HOLLAND BUILDING
Fresno, California.

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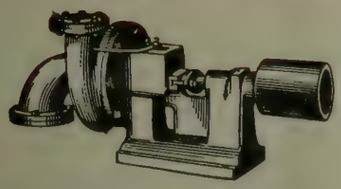
End Pump Troubles



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If water is to be raised above surface of ground, how high? (Length and size of pipe line) .....
Volume of water desired (Gals. per min.) .....
(Inches) .....
If you have pit, give width ..... length .....
depth .....
H. P. of motor or engine if you have that equipment .....
Give total depth of well .....
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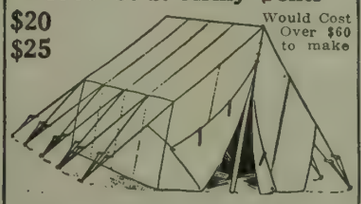

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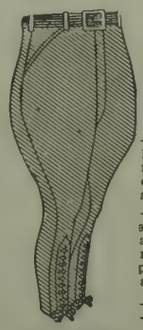

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—Olive drab khaki..$1.00
—Olive drab all wool 1.95

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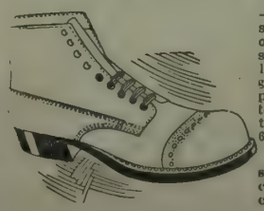

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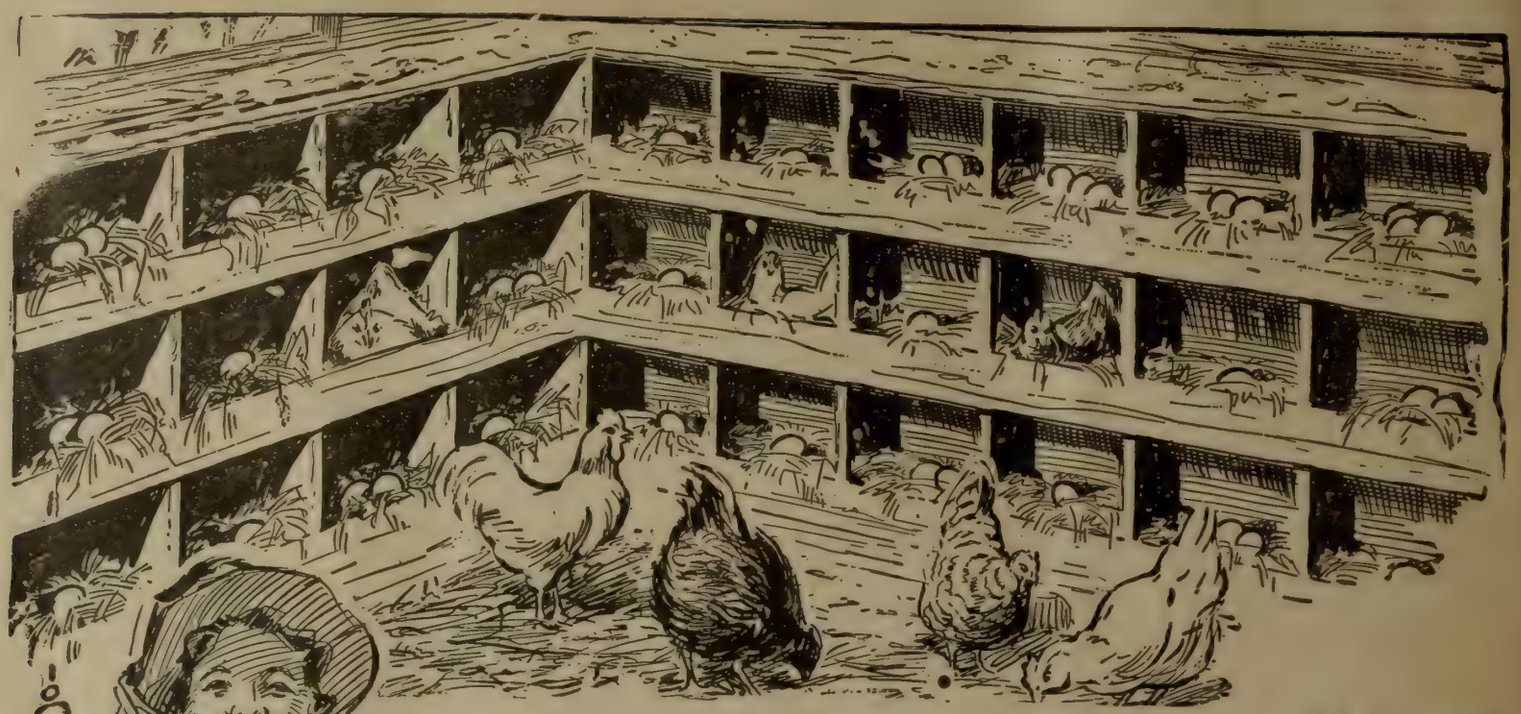

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112 Hens—1800 Eggs
Mrs. Harper writes: "I wouldn't be without "TWO for ONE" for the world; my 112 hens laid 1800 eggs in 1 month."

A WORD to the WOMAN on the FARM

DEAR MADAM:—

As the woman on the farm, the care of the chickens is in your hands. Friend husband does not pay much attention to the poultry end. He is concerned with his hogs, his cattle and his crops. He leaves the chickens to you, and the amount of money you make out of your flock solely up to you.

Now, ask yourself, do you look after your poultry-raising as well as your husband looks after his interests? Are you as up-to-date in caring for your chickens as your husband in caring for his hogs, cattle and fields? Or are you still pursuing the old-fashioned method of letting the chickens shift for themselves.

When your husband wants a new threshing machine, he buys it. When he finds it advisable to trade in his old automobile for a new one, he doesn't hesitate. When he wants a new hog pen, a new cattle barn or silo, he goes right ahead and gives his orders.

When he hears of a stock food that is good for cattle he gives it a trial. When he learns of a new tonic for hogs, he is eager to see what it will do for his herd. In other words, he is always alive to every opportunity to secure better results and make more money.

You and Your Chickens

Now let us see what you do.

Looking over your favorite farm paper of an evening you see an advertisement that arouses your interest. You turn to friend husband and say. "John I see an egg tonic advertised which seems to do fine work according to the letters printed here. I think we should try it for our chickens. We're feeding them a lot of high priced corn and we're not getting anywhere near as many eggs as I think we should. I believe I'll just send fo some of this tonic and give it a trial."

"Oh bosh," says John. "Sounds too good to be true. Don't pay any attention to it."

And as usual, you abide by your husband's judgment and continue to plod along in the old-fashioned way.

John forgets that he uses stock foods and tonics for his cattle and hogs. He forgets that it is to new discoveries and new improvements that he owes much of his success as a farmer. He forgets that you, as the caretaker of the chickens, have just as much right to try for better results as he has in his work.

Of course, it is not that your husband is opposed to your making more money out of your flock. He is simply too busy with other matters to give serious consideration to chicken tonic. But is this quite fair to you?

Probably you depend on your chickens for your pin money, as many a woman does. And you surely have the right to try to make as much as you can.

Egg Tonic Has Come to Stay

There is no doubt about it, but a **good** egg tonic means more eggs. This has been proven over and over again. As a result, egg tonic will soon be used as universally as stock foods and hog tonics. The time is here when poultry raisers have to recognize this fact. They should not be misled by "wise" friends and neighbors who don't believe doing things any way but the old-fashioned way.

"TWO for ONE"

We **know** what "Two-for-One" will do for you. That is why we want you to try it. We don't make any money on a trial $1.00 or $2.00 box. The first order sold to a customer is sold at a loss. It is on the repeat orders that we make a profit. We are willing to stand a loss on the first order simply to get poultry raisers to try "Two-for-One". We know that once it is tried, the flock-owner will buy more and more.

Ask yourself, could we for one minute think of selling the first order of "Two-for-One" at a loss if there was a question as to the merit of this egg tonic. No indeed! We **know** the success of "Two-for-One" and that is why we depend on future orders for our profit.

Since you have nothing to lose, and much to gain, you owe it to yourself to give "Two-for-One" a trial.

KINSELLA COMPANY

Make Lazy Hens Lay

POULTRY raisers who have not given some thought to increasing their egg production this fall and winter, are making a big mistake. Present indications are, the price of eggs will be very high, and if the owners of laying hens do not make an effort to profit by these conditions they will regret it later, particularly when they hear of the large profits being made by their next door neighbor. If there ever was a time when a little extra attention should be given to the poultry yard, it is now. Do not delay. A few pennies spent wisely today will bring you back dollars tomorrow.

"TWO for ONE"

World's Greatest Egg Maker

"TWO for ONE" is the marvel of all egg tonics. It is the most remarkable producer of eggs ever known to the poultry world. "TWO for ONE" is making records every day in egg production that were never before believed possible. Flock owners all over the country are amazed with the results. The most experienced poultry experts say they have never seen the like of it.

"TWO for ONE" is not a mere food. It is an egg tonic in the truest sense of the term—a scientific preparation in concentrated tablet form—the result of scientific research and experiment. Every factor entering into the matter of egg production was scientifically studied.

Winter Eggs

As a result you have in "TWO for ONE" a tonic that conditions the hen for the utmost in laying capacity—that builds muscle and bone—that stimulates active functioning of the hen's reproductive organs—that insures fertile eggs and 100% hatchings—that makes the laggard lay and increases the production of active layers. A tonic that gets more eggs for you, winter and summer than you ever thought possible.

Mail This Coupon—NOW!

$5,000 Egg Laying Contest

Have you entered our $5000.00 egg laying contest? If not do so right away; it's free to all users of "TWO for ONE.". You not only increase your egg production but you may win one of the big cash prizes we are giving every month. Write us today for particulars.

Money-Back Guarantee!

Don't take our word for it. "TWO for ONE" is sold under the distinct guarantee that if you are not entirely satisfied **you get your money back.** Take advantage of this offer and send for a box of "TWO for ONE" today.

Only $1.00 a box, or $2.00 for large box containing as much as three $1.00 boxes—enough for an entire season. This costs you 1-15 of a cent a day per hen, **or less than 1c a dozen for the additional eggs you will receive from your flock.**

KINSELLA CO., 3749 LeMoyne Bldg., Chicago, Ill.

Gentlemen:—I want to increase the egg laying ability of my hens, make money out of my chickens and take advantage of the high prices that will be paid during the coming fall and winter. So please find enclosed $..... for a box of "TWO for ONE" as checked below:

(Check in square opposite size wanted):

Small Size (Including War Tax) $1.00 [ ]
Large Size (Including War Tax) $2.00 [ ]

This order entitles me to entry in your $5000.00 egg laying contest, of which you are to send me full particulars, and my money is to be returned if I am not entirely satisfied with the tonic.

Name .....

Address .....

.....

KINSELLA CO., 3749 LeMoyne Bldg., Chicago, "The House That Returns Your Money if Not Satisfied"